NOVA SCOTIA

1980 ENERGY STATISTICAL PROFILE

Nova Scotia
Department of
Mines and Energy
Honourable Ron Barkhouse, Minister

1980 NOVA SCOTIA ENERGY STATISTICAL PROFILE

"1980 Nova Scotia Energy Statistical Profile" is the fourth publication of this type prepared by the Nova Scotia Department of Mines and Energy. This document contains a comprehensive review of energy supply and demand in Nova Scotia in 1980, as well as historical data.

The information contained within the following pages should serve as a reference source for students and researchers, as well as being of interest to the public. Any questions concerning data contained within the publication should be addressed to the Economics and Statistics Section of the Energy Management Division.

Nova Scotia Department of Mines and Energy
May, 1982

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NOVA SCOTIA ENERGY USE
— AN OVERVIEW

Energy Use in 1980

Nova Scotia relied on imported crude oil for 75% of its primary energy requirements during 1980, an improvement on a foreign dependence that was 78% in 1979 and more than 80% in 1978. The major price increases in crude oil by the OPEC (Organization of Petroleum Exporting Countries) nations have led to increased "energy awareness" on the part of Nova Scotians, and more efficient use of energy from all sources. These factors helped reduce Nova Scotia's total primary energy requirements from a level of 261.75 trillion BTUs in 1973 to 237.91 trillion BTUs in 1977. Only recently has consumption increased, 5.8% in 1978, 3.7% in 1979, and 0.5% in 1980, to 262.45 trillion BTUs, once again reaching a level comparable to that of 1973. Reasons for this increase will be presented in the following analysis of energy by source.

Petroleum

Refined petroleum product sales decreased by almost 1.2 million barrels, or 3.6% in 1980. This decline was largely due to a major reduction in heavy fuel oil sales. Changes in the sales of some major petroleum products in 1980 were as follows:

Product	Change
Motor Gasoline	-35,913 bbls. or -0.5%
Light Fuel Oil	150,840 bbls. or 2.5%
Diesel Fuel Oil	85,835 bbls. or 2.4%
Heavy Fuel Oil	-1,305,890 bbls. or -10.9%

Coal

Coal production increased substantially during 1980, recording a 26.3% increase from the level recorded during the previous year. The increased use of coal for electrical generation contributed to the increased demand for coal within the province.

Electricity

Electrical generation within the province increased 11.3% in 1980. However net generation only increased by 4.5% in 1980 since receipts of electricity from New Brunswick fell and deliveries of electricity to New Brunswick rose from their 1979 levels.

TOTAL ENERGY USE

NOVA SCOTIA
PRIMARY
ENERGY
CONSUMPTION

Primary energy* consumption has increased by less than 0.3% since 1973 (this represents an average annual increase of less than 0.04%). In 1980, crude oil provided 75% of total energy requirements. This is an improvement over the 78% dependency recorded in 1979. Hydro energy provided approximately 3% of total energy requirements in 1980; this is 44% less than in the previous year. Coal use provided 22% of total energy in 1980, an increase of 36% over 1979 use. Increasing coal usage should continue well into the 1980's.

Primary Energy Consumption 1973-1980
(trillions of BTUs/trillions of kilojoules)

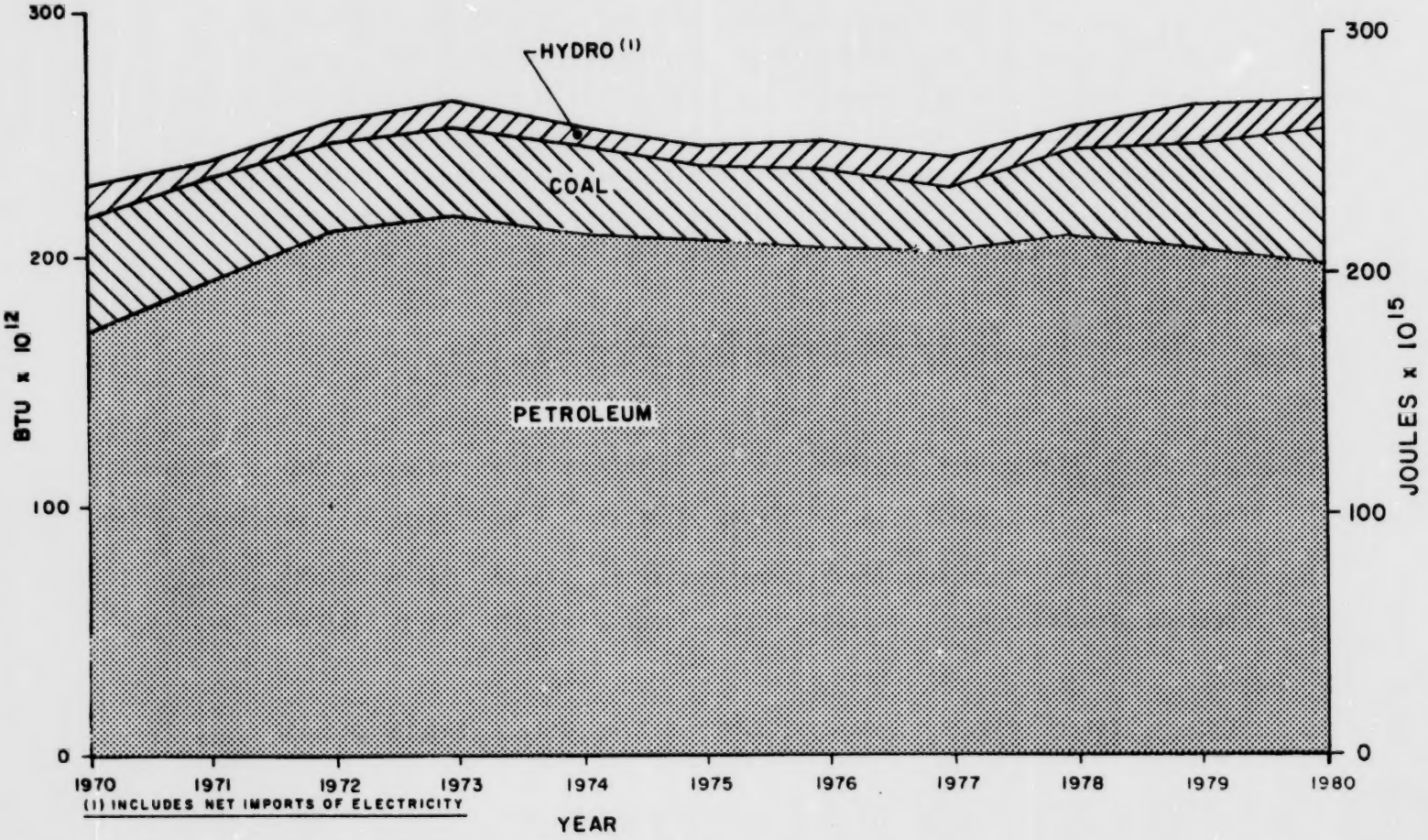
	1973	1974	1975	1976	1977	1978	1979	1980	1980
Hydro	10.12	9.00	8.24	11.65	11.58	9.94	15.28	8.49	8.95
Coal	35.63	35.28	29.36	32.23	25.69	34.50	42.50	57.97	61.14
Petroleum	216.00	208.50	205.82	201.21	200.64	207.33	203.35	195.99	206.69
TOTAL	261.75	252.78	243.42	245.09	237.91	251.77	261.13	262.45	276.78

* Primary energy refers to the gross consumption of all energy sources. All energy imports by the province as well as losses during conversion of primary to secondary energy (i.e. electricity) are included.

Shaded area represents metric equivalent (trillions of kilojoules)

PRIMARY ENERGY CONSUMPTION-NOVA SCOTIA

1970 - 1980



(1) INCLUDES NET IMPORTS OF ELECTRICITY

PER CAPITA
PRIMARY ENERGY
CONSUMPTION

The Atlantic region has the highest per capita consumption of crude oil as a primary source in Canada. All of this crude oil is imported. As can be seen from the graph, the Atlantic Provinces are dependent upon foreign sources for most of their energy requirements. Due to the relative insecurity of foreign supplies, and the lack of available alternative fuels such as natural gas, this region is vulnerable to outside supply disruptions.

Per Capita Primary Energy Consumption and Net Foreign Dependence (1980)
(millions of BTUs/billions of joules)

	Crude Oil	Coal	Hydro	Nuclear	Natural Gas	Total	Total Metric Equivalent	% Foreign Dependence
Canada (inc. NWT & Yukon)	164.37	37.12	93.57	15.00	63.85	373.91	394.33	18.3
New-Foundland	176.08	0.09	121.24	-	-	297.41	313.65	59.2
Prince Edward Island	168.85	2.37	31.20	-	-	202.42	213.48	84.3
Nova Scotia	229.90	68.00	9.96	-	-	307.86	324.67	74.8
New Brunswick	279.82	18.88	30.98	-	0.11	329.79	347.80	85.1
Quebec	167.47	2.64	187.05	-	16.36	373.52	393.92	20.2
Ontario	142.04	58.28	42.45	41.86	76.78	361.41	381.15	17.8
Manitoba	123.41	8.58	132.09	-	61.20	325.28	343.05	0.8
Saskat.	160.94	83.77	32.73	-	100.58	378.02	398.67	1.1
Alberta	197.39	98.51	6.84	-	217.72	520.46	548.88	0.0
British Columbia	160.56	1.98	152.58	-	57.94	373.06	393.45	2.5

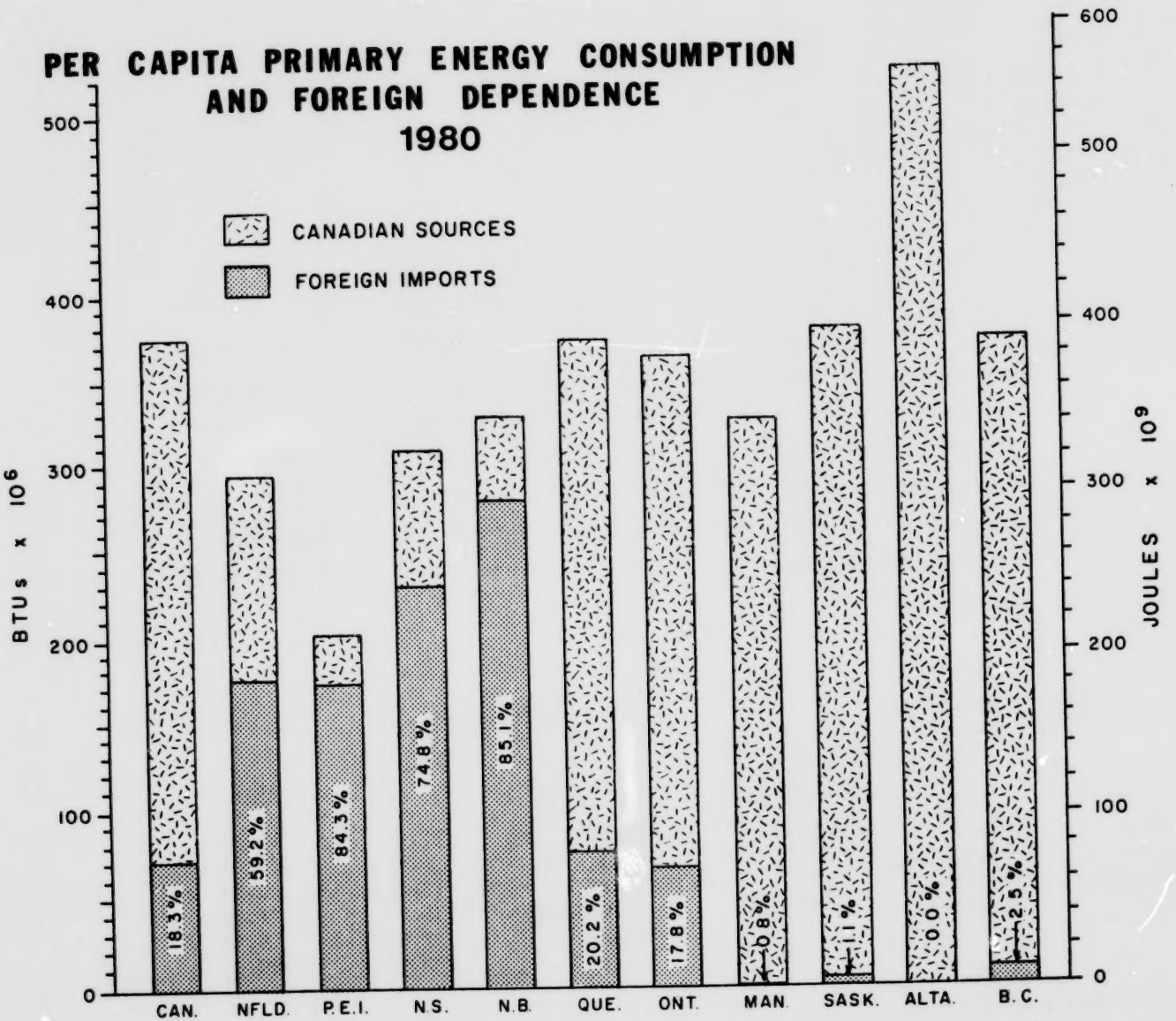
Shaded area represents metric equivalent (billions of joules)

Sources: Coal and Coke Statistics
Statistics Canada Catalogue No. 45-002

Refined Petroleum Products
Statistics Canada Catalogue No. 45-004

Gas Utilities
Statistics Canada Catalogue No. 55-002

Electric Power Statistics
Statistics Canada Catalogue No. 57-001


PER CAPITA PRIMARY ENERGY CONSUMPTION
AND FOREIGN DEPENDENCE
1980
CANADIAN SOURCES
FOREIGN IMPORTS
BTUs x 10⁶
JOULES x 10⁹
0
100
200
300
400
500
600
18.3%
59.2%
84.3%
74.8%
85.1%
20.2%
17.8%
0.8%
1.1%
0.0%
2.5%
CAN.
NFLD.
P.E.I.
N.S.
N.B.
QUE.
ONT.
MAN.
SASK.
ALTA.
B.C.

LOSSES DURING CONVERSION OF PRIMARY ENERGY TO END USE ENERGY

In Nova Scotia 262.45 trillion BTUs of primary energy were consumed during 1980. This represents total consumption of primary resources including petroleum products, coal and hydro-power. However, a substantial portion of these primary resources were used to generate secondary energy, including electricity and coke. The percentages of each primary source used for creating secondary, or "end use", energy are shown by the shaded parts of the energy pie diagram at the right. In 1980, this end use energy consumption equalled 190.95 trillion BTUs. Thus, 27.2% of primary energy used was lost during conversion.

Primary Energy (trillions of BTUs)		% of Total
Hydro	8.49	3.2%
Coal	57.97	22.1%
Petroleum	195.99	74.7%
Total	262.45	100.0%

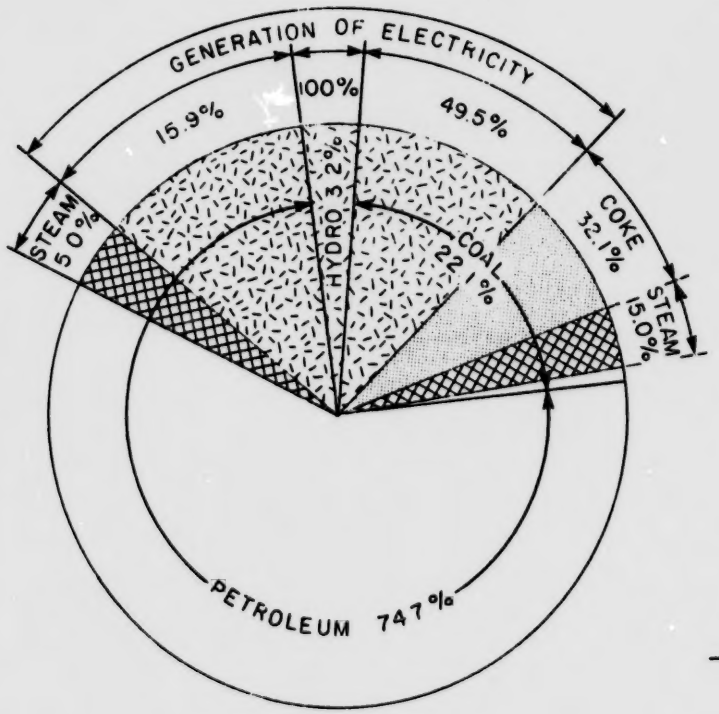
End Use Energy (trillions of BTUs)		% of Total
Electricity	21.94	11.5%
Coal	1.86	1.0%
Coke*	13.16	6.9%
Petroleum**	136.09	71.2%
Steam	17.90	9.4%
Total	190.95	100.0%

* Includes coke oven gas
** Includes Gas Plant NGL's

LOSSES DURING CONVERSION

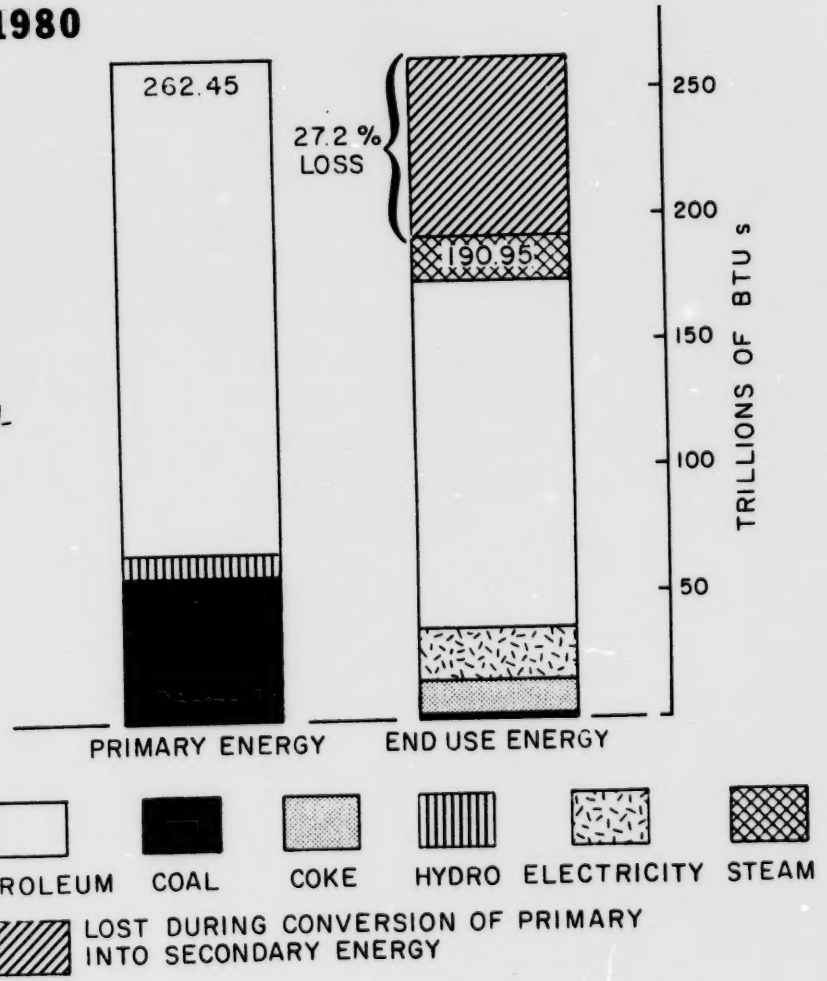
OF PRIMARY ENERGY TO END USE ENERGY

1980



PRIMARY ENERGY

262.45 TRILLION BTU s

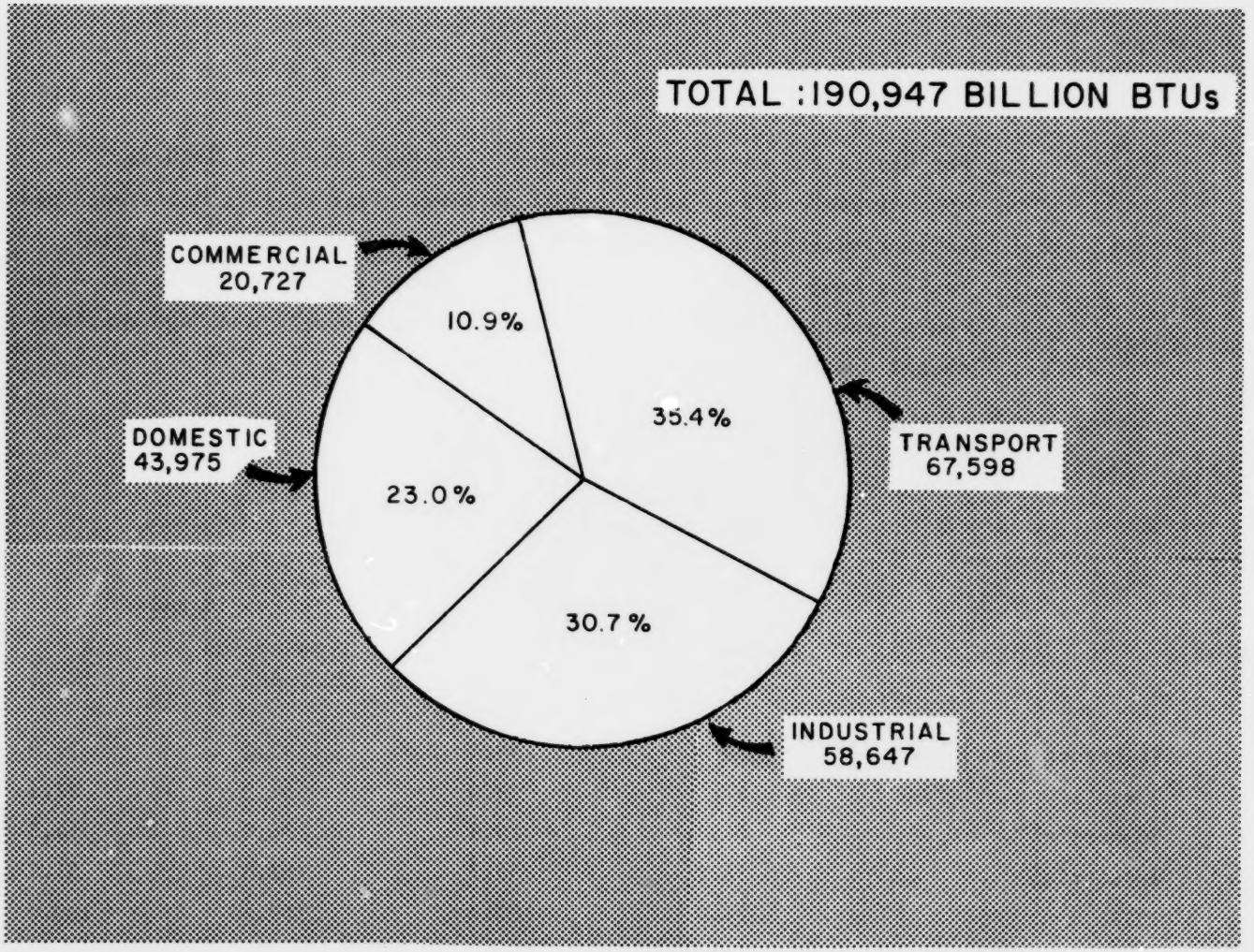


NOVA SCOTIA
END USE
CONSUMPTION

End use energy refers to the energy used by the final consuming sectors. End use energy consumed in Nova Scotia during 1980 totalled 190,947 billion BTUs, a decrease of 1.1% from the previous year. The transportation sector was the largest consumer, accounting for 35.4% of the total. The industrial and domestic sectors consumed 30.7% and 23.0%, respectively. The commercial sector accounted for the remaining 10.9% of net energy consumption. The following diagram illustrates a more complete breakdown for 1980.

END USE ENERGY CONSUMPTION

1980



PER CAPITA
END USE
CONSUMPTION -
NOVA SCOTIA
AND CANADA

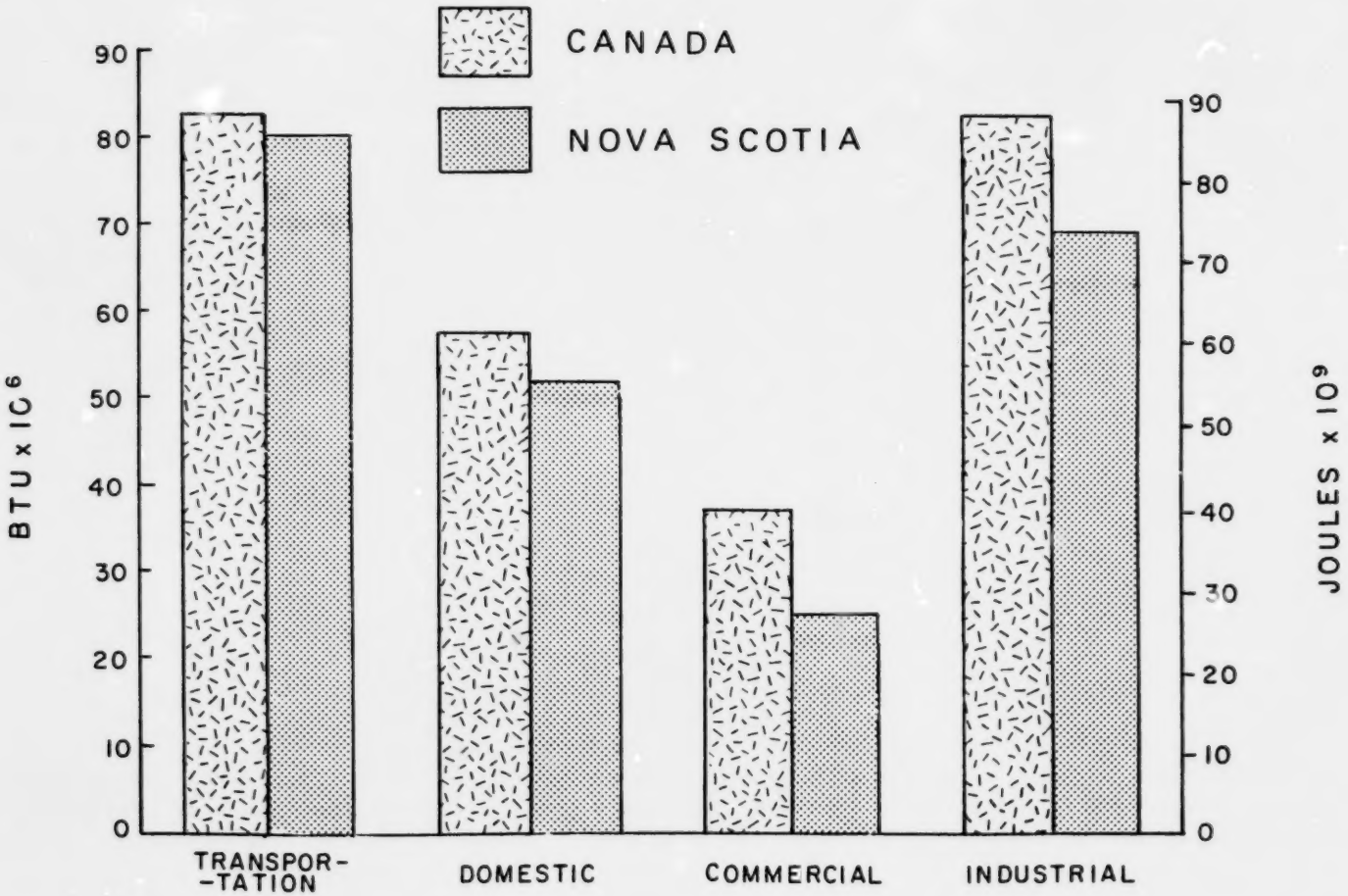
Per capita end use energy consumption in Nova Scotia in 1980 was approximately 87% of the national average. Part of this difference can be attributed to Nova Scotia's relatively underdeveloped industrial base as compared with other regions in Canada. The following table and chart provide a detailed comparison between Canada's and Nova Scotia's energy demand by sector.

Per Capita End Use Energy Consumption
By Sector, 1980
(millions of BTUs)

	Nova Scotia		Canada	
	Consumption per Capita	% of Total	Consumption per Capita	% of Total
Transportation	79.3	35.4	82.1	31.9
Domestic	51.6	23.0	57.0	22.1
Commercial	24.3	10.9	36.9	14.3
Industrial	68.8	30.7	81.5	31.7
TOTAL	224.0	100.0	257.5	100.0

PER CAPITA END USE ENERGY CONSUMPTION

1980



NOVA SCOTIA DETAILED END USE ENERGY CONSUMPTION

Nova Scotia Energy Demand 1980, By Sector*
(billions of BTUs/trillions of joules)

	Coal	Coke	Coke Oven Gas	Gas Plant NGL's	Motor Gasoline	Kerosene & Stove Oil	Diesel Fuel Oil
Transportation							
- Road	-	-	-	-	39,908	-	7,041
- Rail	-	-	-	-	-	-	2,170
- Air	-	-	-	-	-	-	-
- Marine	-	-	-	-	-	-	6,781
- Total	-	-	-	-	39,908	-	15,992
Domestic & Farm	1,263	-	-	967	1,362	3,970	737
Commercial	-	-	-	484	-	286	1,798
Industrial	594	8,898	4,264	484	-	101	2,207
TOTAL	1,857	8,898	4,264	1,935	41,270	4,357	20,734

* The Nova Scotia detailed "energy demand" presented above and at the right illustrates end use energy consumption by fuel and by sector. As the data represents End Use, conversion losses as previously cited are not included.

NOVA SCOTIA ENERGY DEMAND 1980, BY SECTOR

Billions of BTU's/Trillions of joules

Light Fuel Oil	Heavy Fuel Oil	Aviation Gasoline	Aviation Turbo Fuel	Electricity	Steam	Total	Metric Equivalent	
								Transportation
-	-	-	-	2	-	46,951	49,515	- Road
-	-	-	-	-	-	2,170	2,289	- Rail
-	-	243	4,178	-	-	4,421	4,662	- Air
-	7,275	-	-	-	-	14,056	14,824	- Marine
-	7,275	243	4,178	2	-	67,598	71,290	- Total
27,587	470	-	-	7,619	-	43,975	46,377	Domestic & Farm
6,154	6,055	-	-	5,747	203	20,727	21,859	Commercial
2,625	13,203	-	-	8,570	17,701	58,647	61,850	Industrial
36,366	27,003	243	4,178	21,938	17,904	190,947	201,376	Total

Shaded area represents metric equivalents (trillions of joules)

Source: Quarterly Report on Energy Supply-Demand in Canada
Statistics Canada Catalogue No. 57-003

PETROLEUM PRODUCTS

INTRODUCTION

Petroleum products play a major role in filling the needs of consumers in Nova Scotia. The transportation and electrical generation sectors are the major consumers of petroleum products in the province's economy. The general trend in Nova Scotia indicates that a slightly lower growth in petroleum consumption has taken place since 1974 than in the preceding decade. Further examination of petroleum consumption and sector by sector analysis is contained in the following pages.

CRUDE OIL IMPORTS CLEARED THROUGH NOVA SCOTIA

Crude oil imports cleared through Nova Scotia in 1980 amounted to 42,457,433 barrels.* This total was almost 25% lower than the total cleared through Nova Scotia during the previous year. This reduction, which exacerbated the problem of excess refinery capacity in the Atlantic Provinces, was caused by the falling demand for refined petroleum products. The value of imported oil rose 26.5% from the value in 1979. The per barrel cost of crude oil has increased over 1,300% since 1972, and 65.6% since 1979. Crude oil was obtained from a wider range of countries during 1980. By diversifying the sources of supply, the possible effects of any supply disruption were minimized.

* Not necessarily consumed in Nova Scotia

Crude Oil Cleared Through Nova Scotia

Crude Oil Imports 1980

Country of Origin	Quantity (Barrels)	Total Value (Dollars)
Venezuela	21,826,378	740,667,725
Saudi Arabia	7,362,479	232,783,141
Iraq	5,161,057	175,418,872
Kuwait	3,944,571	128,014,809
Mexico	2,179,384	80,854,496
Nigeria	963,792	41,284,632
United States	346,952	10,991,548
Other	672,820	24,883,781
TOTAL	42,457,433	1,434,904,004

Crude Oil Imports 1972-1980

Year	Quantity (Barrels)	Unit Value (Dollars)*
1972	52,056,999	2.40
1973	69,677,510	3.08
1974	58,440,241	9.81
1975	60,470,022	11.22
1976	58,904,066	11.86
1977	61,260,805	13.56
1978	55,866,243	14.97
1979	55,567,640	20.41
1980	42,457,433	33.80

* All prices are in Canadian dollars F.O.B. country of origin

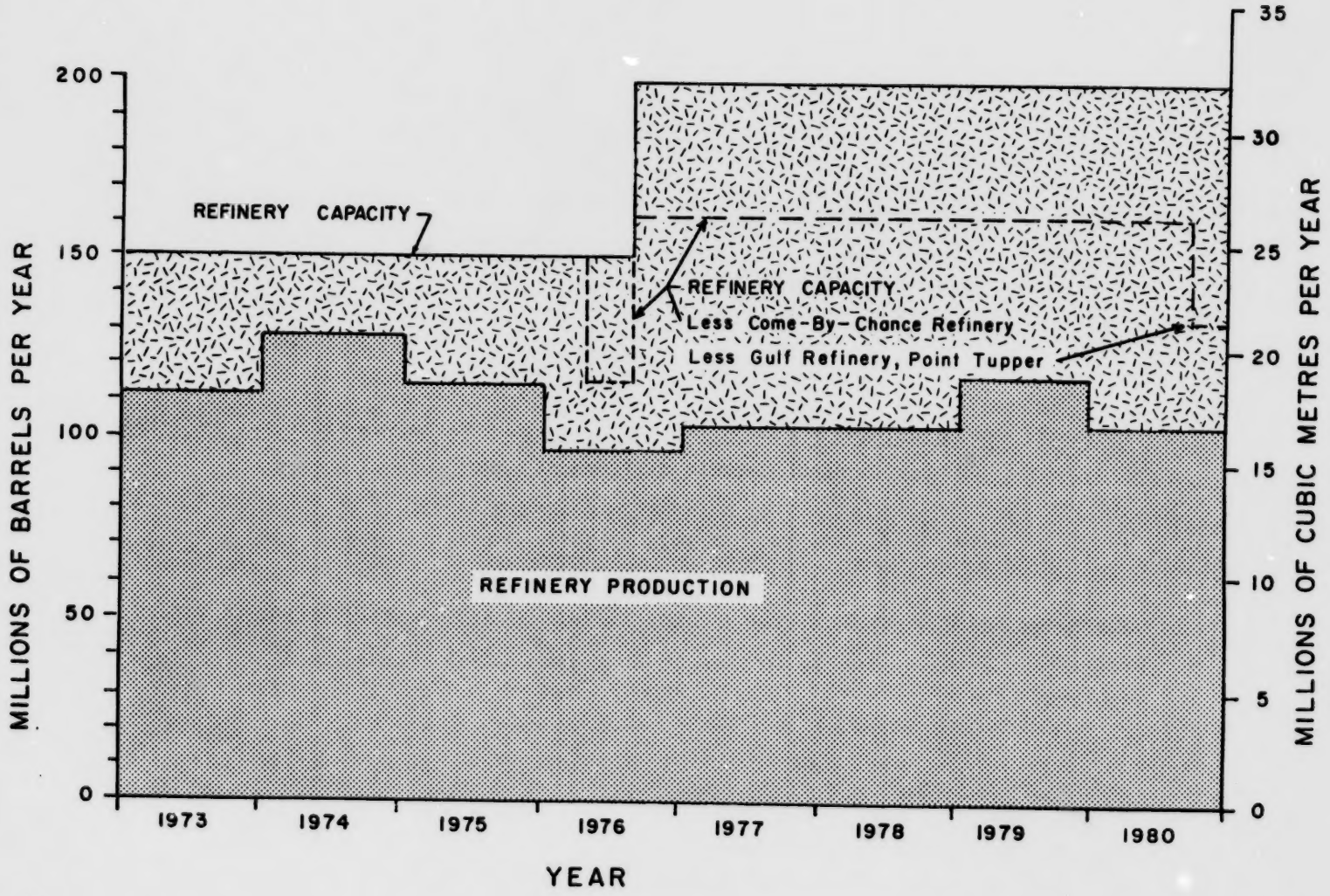
NOVA SCOTIA
REFINERY
STATISTICS

Atlantic Canada currently has excess capacity in the petroleum refining industry. This has already caused the closure of the Come-by-Chance refinery in Newfoundland and the Gulf Oil Canada Limited refinery at Point Tupper, Nova Scotia. The diagram on the following page presents the level of refinery utilization in Atlantic Canada for the period 1973-1980. Refinery statistics for Nova Scotia are shown in the table below.

Company	Location	Major Source of Crude	Crude Oil Capacity Barrels per day
Gulf Oil Canada Limited*	Pt. Tupper	Middle East & West Africa	80,000
Imperial Oil Enterprises Ltd.	Dartmouth	Venezuela	82,500
Texaco Canada Ltd.	Dartmouth	Venezuela & Middle East	18,000
		Total Capacity	180,500

Source: Energy and Mines Division - Statistics Canada
* Ceased production as of October, 1980

ATLANTIC CANADA
REFINERY UTILIZATION



ATLANTIC
NET SALES,
EXPORTS AND
IMPORTS OF
REFINED
PETROLEUM
PRODUCTS

Sales of refined petroleum products in Atlantic Canada remained at the same level in 1980 as in 1979. Export sales to the United States have increased significantly since 1978, reaching the levels of 1973. Imports of refined products also increased in 1980.

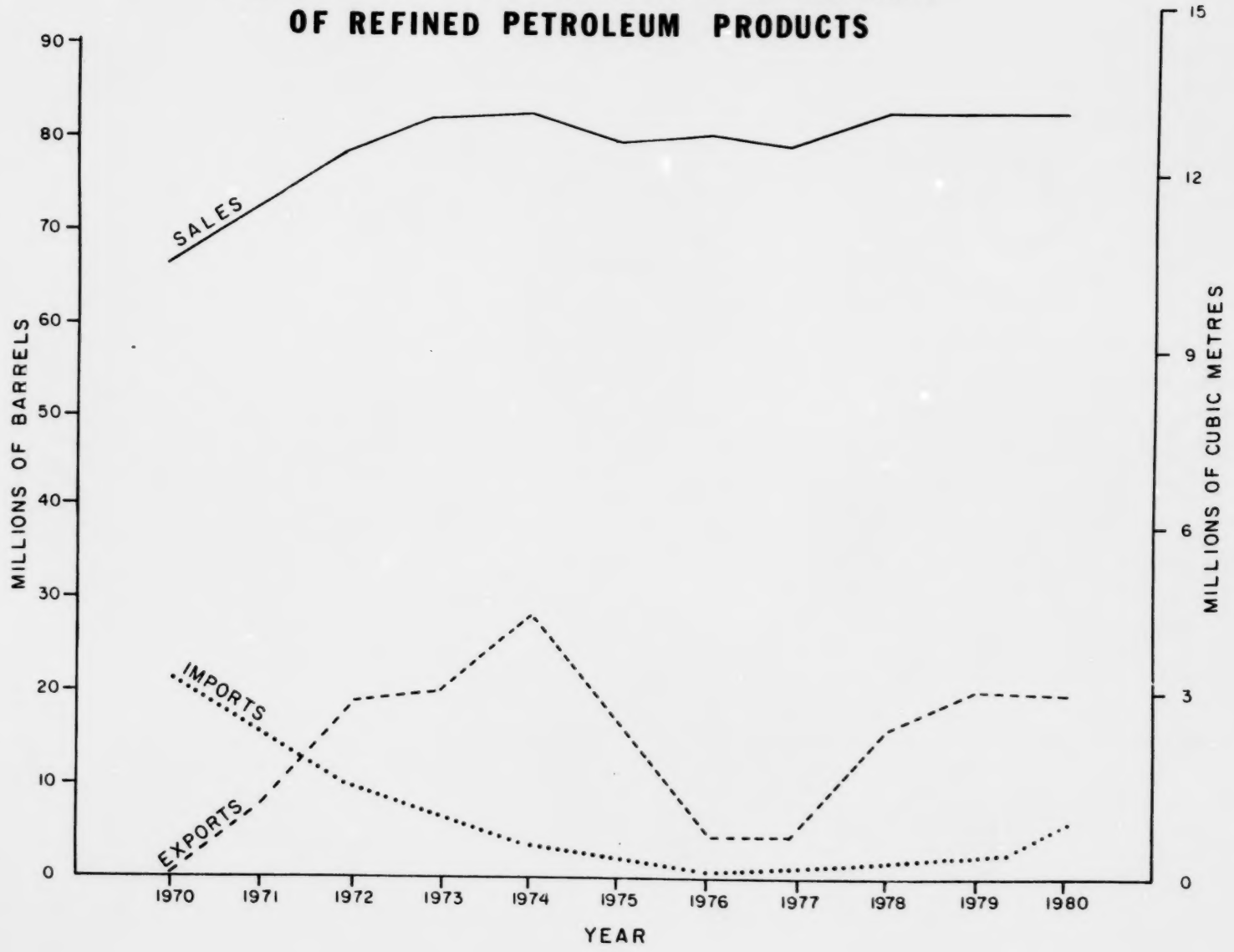
Atlantic Net Sales, Exports, and Imports of Refined Petroleum Products, 1973-1980

(millions of barrels/millions of cubic metres)

	1973	1974	1975	1976	1977	1978	1979	1980	1980
Net Sales	82.0	81.9	78.6	80.2	78.9	82.6	83.3	83.3	13.2
Exports	20.6	27.5	15.4	4.2	5.5	15.6	20.3	19.9	3.2
Imports	6.1	3.3	2.1	0.3	0.8	0.7	1.38	6.2	1.0

Shaded area represents metric equivalent (millions of cubic metres)

Source: Refined Petroleum Products
Statistics Canada Catalogue No. 45-004


ATLANTIC NET SALES, IMPORTS & EXPORTS
OF REFINED PETROLEUM PRODUCTS
MILLIONS OF BARRELS
MILLIONS OF CUBIC METRES
SALES
IMPORTS
EXPORTS
YEAR
0
10
20
30
40
50
60
70
80
90
0
3
6
9
12
15
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980

NOVA SCOTIA
REFINED
PETROLEUM
PRODUCT SALES

Sales of refined petroleum products decreased by 3.6% during 1980. This drop was largely due to a reduction in heavy fuel oil sales from 36.5% of total net sales in 1979 to 33.7% in 1980. Both light fuel and motor gasoline increased their share of refined petroleum products sales in 1980. In 1980, the share accounted for by light fuel oil was 19.9% compared to 18.8% for the previous year. Motor gasoline represented 25.0% of total product sales in 1980 compared to 24.2% in 1979.

Nova Scotia Refined Petroleum Product Sales, 1978 - 1980

(thousands of barrels/thousands of cubic metres)

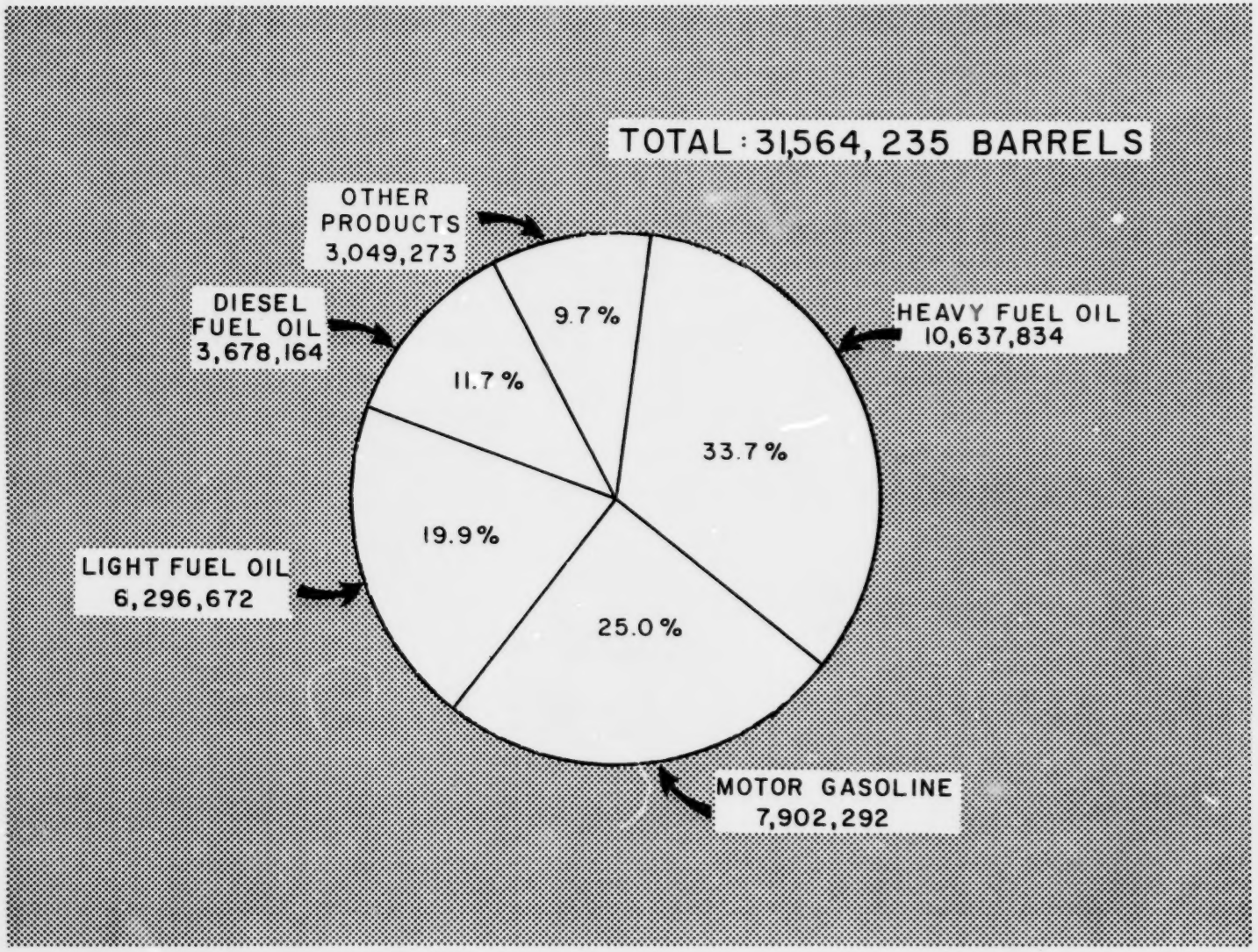
Product	1978	1979	1980	1980
Propane & Propane Mixes	385	428	438	70
Butane & Butane Mixes	7	-	-	-
Petro-Chemical Feedstocks	141	191	200	32
Naptha Specialties	27	29	30	5
Aviation Gasoline	118	94	48	8
Motor Gasoline	7791	7938	7902	1256
Aviation Turbo Fuel	685	747	772	123
Kerosene Stove Oil Tracto	965	834	767	122
Diesel Fuel Oil	3449	3592	3678	584
Light Fuel Oil	6402	6146	6297	1001
Heavy Fuel Oil	12592	11944	10638	1690
Asphalt	655	623	607	96
Lubrication Oil & Grease	159	173	178	28
Other Products	14	11	9	1
Total, All Products	33390	32750	31564	5016

Shaded area represents metric equivalent (thousands of cubic metres)

Source: Refined Petroleum Products
Statistics Canada Catalogue No. 45-004

N. S. SALES OF REFINED PETROLEUM PRODUCTS

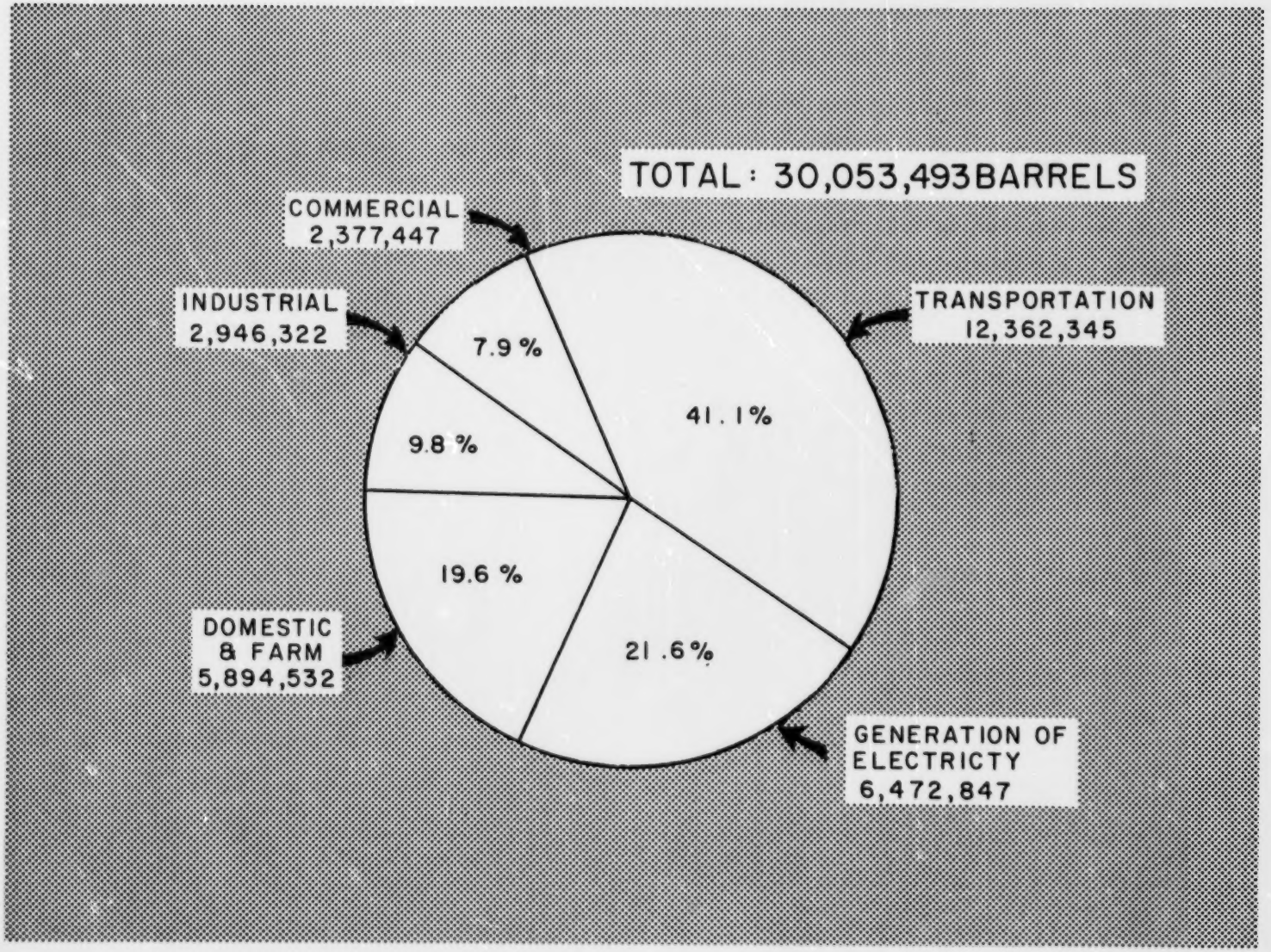
1980



NOVA SCOTIA
PETROLEUM
END USE

In 1980, petroleum product end use totalled 30,053,493 barrels. This figure differs from total Nova Scotia sales of refined petroleum products in that the end use figure does not include petroleum products used by the oil refinery and supply industry, and non-energy uses. Of this total petroleum end use, the transportation sector accounted for 41.1%. The generation of electricity and steam and domestic use represented 21.6% and 19.6% of petroleum end use, respectively.

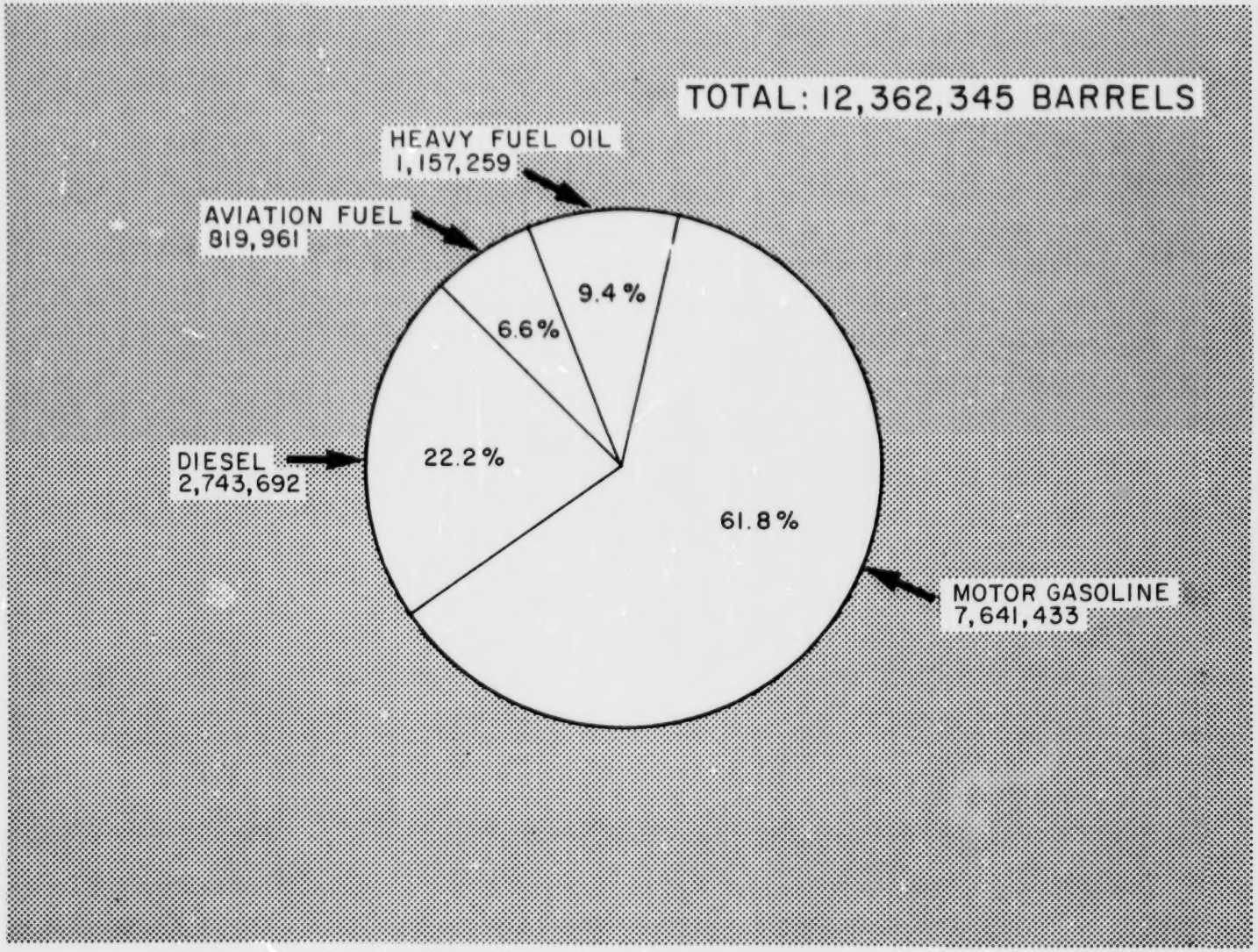
PETROLEUM END USE 1980



PETROLEUM PRODUCTS CONSUMED IN THE TRANSPORTATION SECTOR

During 1980 the transportation sector used 12,362,345 barrels of fuel. This represented 41.1% of the total end use of petroleum products. Of this total amount, 61.8% was consumed in the form of motor gasoline. The next major product consumed was diesel fuel which accounted for 22.2% of the total. The following diagram shows the remaining products consumed by the transportation sector.

FUELS USED IN TRANSPORTATION SECTOR
1980

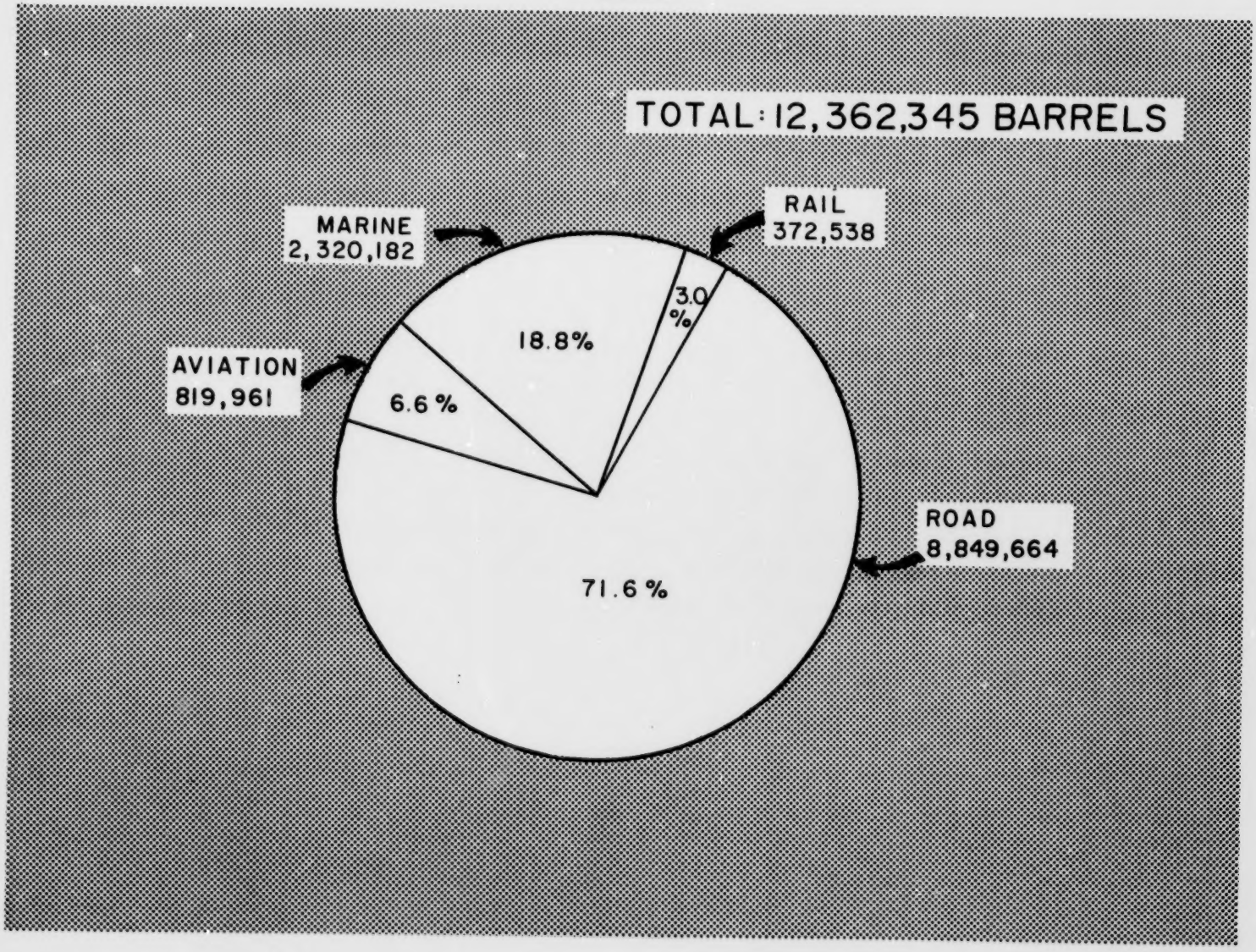


PETROLEUM PRODUCTS CONSUMED IN THE TRANSPORTATION SECTOR BY MODE OF TRAVEL

Road vehicles are by far the largest consumers of transportation energy. In 1980, road use accounted for 8,849,664 barrels of the total 12,362,345. The remaining 3,512,681 barrels were consumed by the marine, aviation and railway modes of transportation.

PETROLEUM CONSUMPTION IN TRANSPORTATION SECTOR

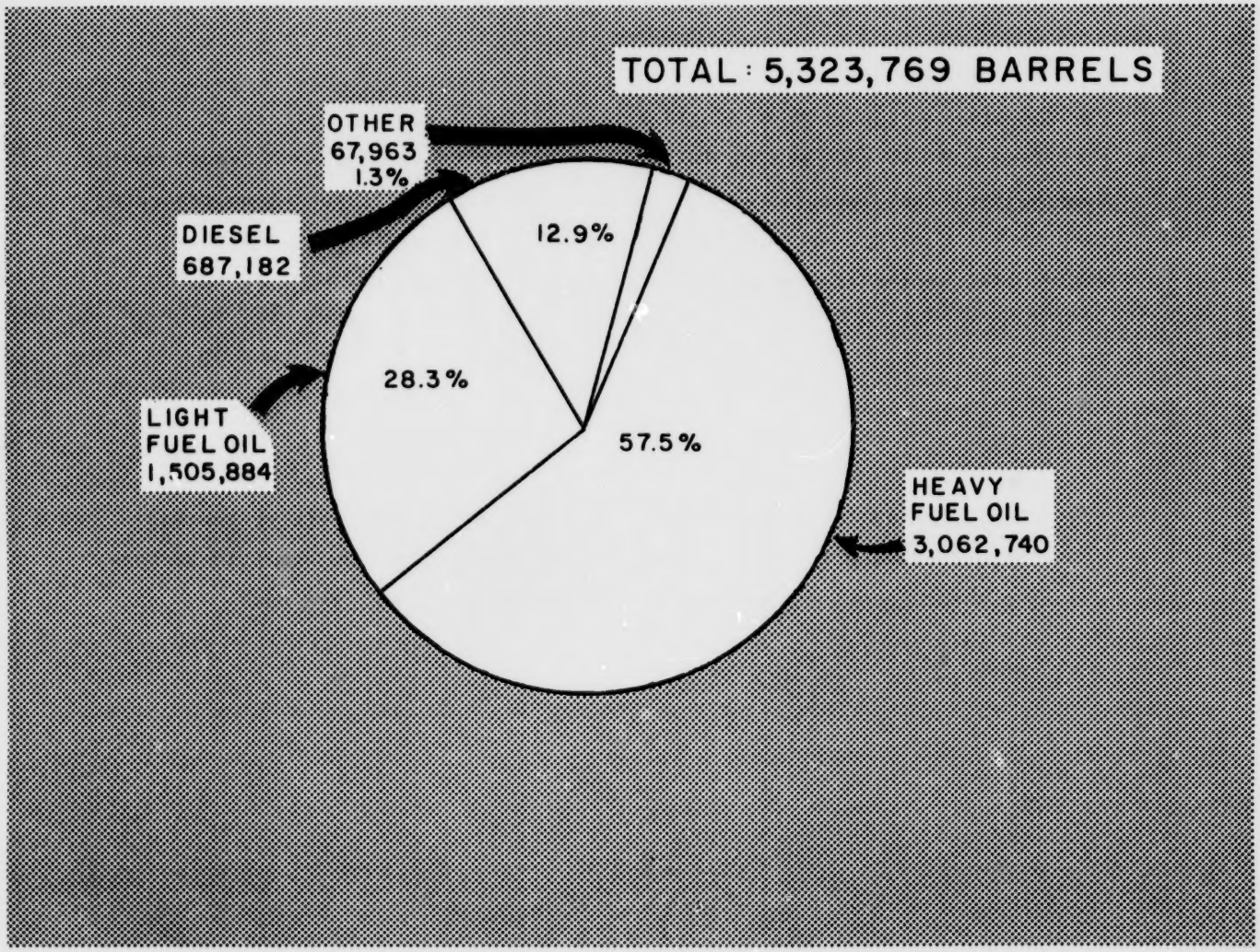
1980



PETROLEUM PRODUCTS CONSUMED IN THE INDUSTRIAL AND COMMERCIAL SECTORS

In Nova Scotia, the industrial and commercial sectors consumed a combined total of 5,323,769 barrels of petroleum products, which amounted to 17.7% of total petroleum end use during 1980. The most important product in these two sectors was heavy fuel oil, which accounted for 3,062,740 barrels or 57.5% of their total petroleum consumption. The industrial sector alone used 2,099,931 barrels of this heavy fuel oil,representing 71.3% of the total petroleum consumption in the industrial sector.

FUELS USED IN THE COMMERCIAL AND INDUSTRIAL SECTORS 1980



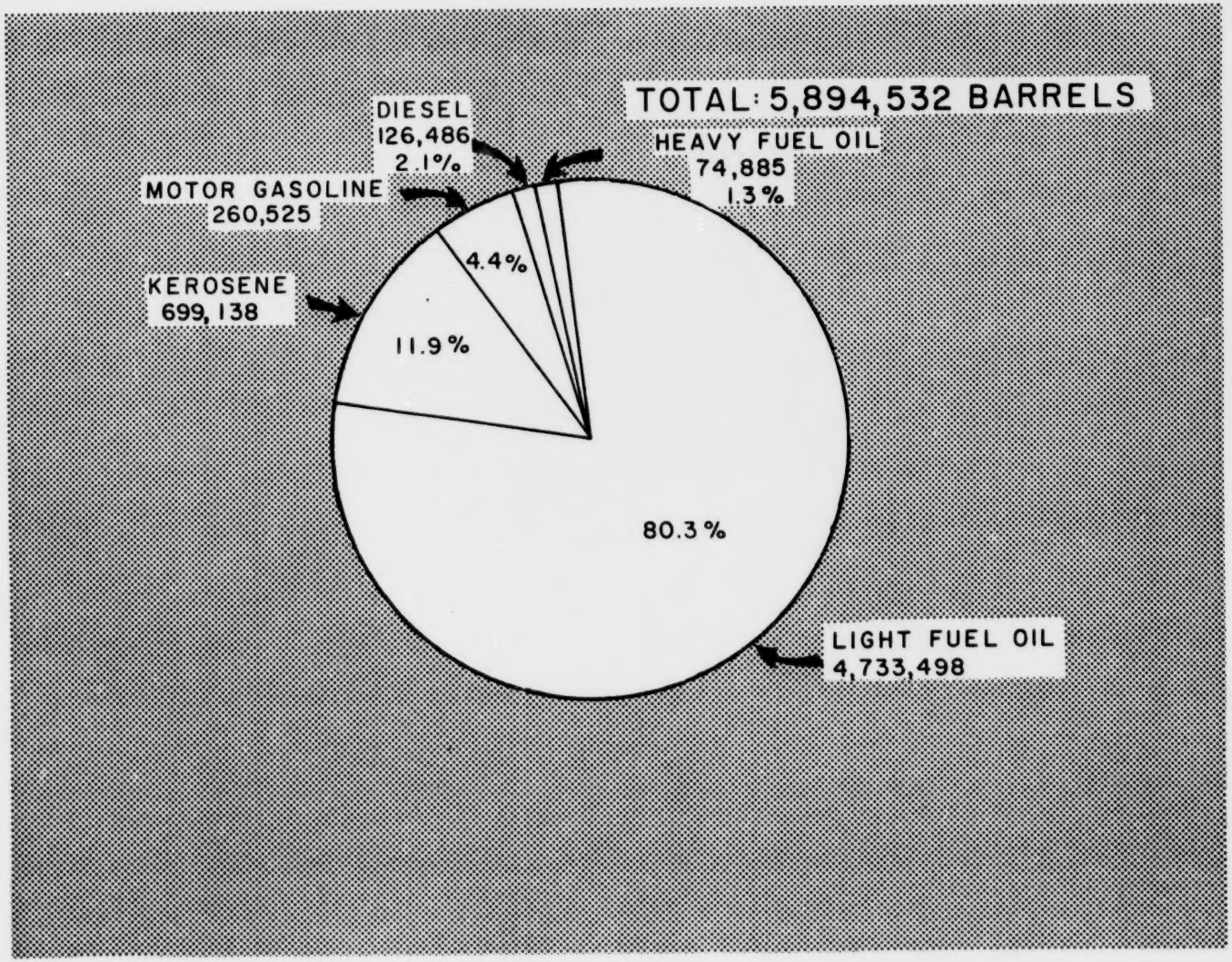
PETROLEUM PRODUCTS CONSUMED IN THE DOMESTIC SECTOR

The domestic sector of Nova Scotia accounted for 5,894,532 barrels of petroleum end use consumption in 1980, a 2.1% increase over 1979 requirements. Home heating fuel represented the largest market share of petroleum products used by the domestic sector, 92.2% in total.[1] The remaining fuels used in the residential sector are shown in the following pie diagram.

(1) Gasoline used for transportation purposes by the domestic sector was included in the transportation sector, rather than the domestic sector. The motor gasoline included in this sector was for "farm use".

FUELS USED IN THE DOMESTIC SECTOR

1980



ELECTRICITY

INTRODUCTION

The province of Nova Scotia obtained more than 86% of its electrical energy by thermal generation in 1980. Slightly less than half of this thermal power was generated by burning petroleum products. In the recent past, coal had provided only one fifth of total generation. This figure has risen to over 40% since the installation of two new coal fired generation units during 1979 and 1980. The Wreck Cove project added to hydroelectric generation capacity with the addition of two 100 MW units in 1978. The following pages examine in detail the electric power situation in the Province of Nova Scotia.

NOVA SCOTIA
ELECTRIC UTILITY
GENERATING PLANTS

Nova Scotia has 54 hydro generating units and 40 thermal generating units with a total capacity of 2,022,067 kW. The Nova Scotia Power Corporation accounts for 95.4% of the capacity, the rest being generated by privately owned units. A 280 kW windmill was installed during 1980. In addition, a pilot tidal project is being installed in the Annapolis Valley to assess the full potential, opportunities and practicality of Fundy Tidal Power.

Thermal Generating Stations

Location	No. of Units	Year Installed	Fuel Used	Generating Capacity (MW)
Burnside	4	1976	No. 2 Fuel Oil	120.000
Glace Bay	5	1951-67	Coal	96.000
Lingan	2	1978-80	Coal	300.000
Maccan	1	1949	Coal	15.000
Point Tupper	2	1969-73	Bunker C	230.750
Trenton	5	1951-69	Coal	210.000
Tufts Cove	3	1965,72,76	Bunker C	350.000
Tusket	1	1971	No. 2 Fuel Oil	23.375
Victoria Junc.	2	1975	No. 2 Fuel Oil	60.000
Water St. Hfx.	6	1944-59	Bunker C	165.000
Total NSPC, Installed	31			1570.125
Privately Owned Installed	9			87.740
Total Nova Scotia Installed	40			1657.865

NOVA SCOTIA HYDRO GENERATING STATIONS

Location	No. of Units	Year Installed	Generating Capacity (MW)
Avon	2	1929, 58	6.75
Bear River			
- Gulch	1	1952	6.00
- Ridge	1	1957	4.00
Dickie Brook	2	1945	3.80
Gisborne	1	1982	3.50
Harmony	1	1943	.60
Hell's Gate	2	1930, 49	6.93
Hollow Bridge	1	1940	5.312
Lequille	1	1968	11.18
Lumsden	1	1942	2.80
Mersey			
- Upper Lake Falls	2	1929	5.40
- Lower Lake Falls	2	1929	7.38
- Big Falls	2	1929	9.00
- Lower Great Brook	2	1955	4.50
- Deep Brook	2	1950	9.00
- Cowie Falls	2	1938	7.20
- Methals	1	1949	3.40
To be Installed:			
Fourth Lake	1	1982	3.00
Annapolis Tidal Project		1983	25.00
Nictaux	1	1954	6.80
Paradise	1	1950	3.60
Roseway	2	1931,49	.92
St. Margarets			
- Mill Lake	2	1922	2.56
- Sandy Lake	2	1928	3.20
- Tidewater	2	1922	4.64
Sheet Harbour			
- Malay Falls	3	1924	3.60
- Ruth Falls	3	1925,36	6.97
Sissiboo			
- Sissiboo	1	1961	6.00
- Weymouth	2	1961,67	18.00
Tusket Falls	3	1929	2.16
Wreck Cove	2	1978	200.00
White Rock	1	1952	3.20
Total NSPC Installed Hydro	51		358.402
Privately Owned Installed Hydro	3		5.520
Total Nova Scotia Installed Hydro	54		363.922
Wreck Cove Windmill	1	1980	.28

Source: Systems Planning, Nova Scotia Power Corporation

NOVA SCOTIA
GENERATION
OF
ELECTRICITY

The total generation of electricity in Nova Scotia increased at an annual rate of 4.1% during the period 1974-80. Specifically, hydro-electric generation increased by 3.3% per annum while thermal generation increased by 4.2%. In 1980, thermal generation accounted for 86.8% of all electrical generation in the province.

Nova Scotia Generation of Electricity 1974-1980

(thousands of kWh)

	1974	1975	1976	1977	1978	1979	1980
Hydro Generation	743,261	623,605	792,013	793,859	771,625	1,176,267	902,795
Thermal Generation	4,658,981	4,837,900	4,870,162	4,965,152	5,360,097	4,989,343	5,960,255
Total Generation	5,402,242	5,461,505	5,662,175	5,759,011	6,131,722	6,165,610	6,863,050
Received from Other Provinces	229,612	297,012	389,692	384,766	261,758	502,386	172,649
Delivered to Other Provinces	72,756	96,238	16,269	20,183	39,853	150,899	226,620

Source: Electric Power Statistics
Statistics Canada Catalogue No. 57-001

FUELS USED
BY NSPC
TO GENERATE
ELECTRICITY

Fuels Used to Generate Electricity, NSPC - 1973-1980

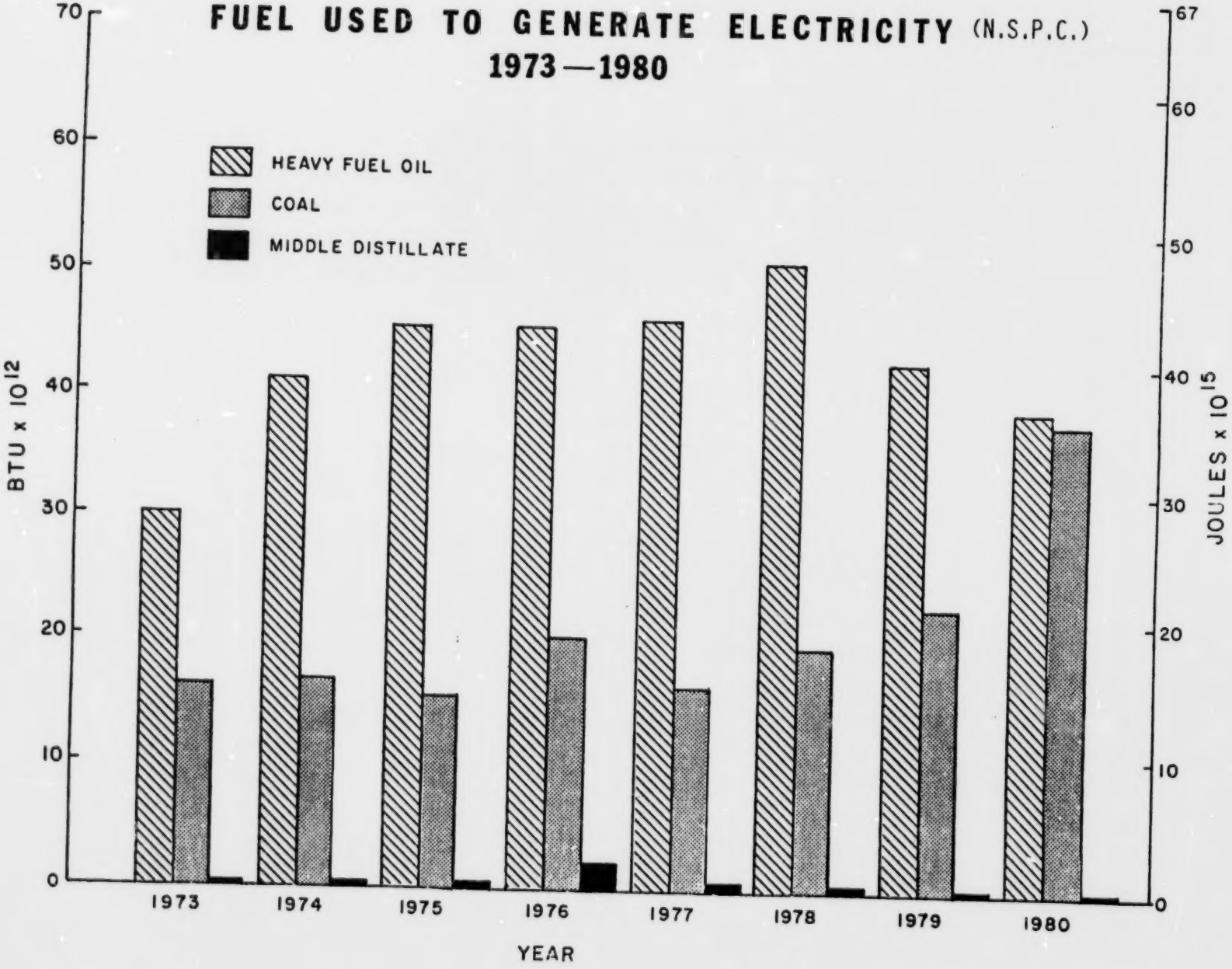
Natural Units

	Coal (short tons metric tonnes)	Light Fuel Oil (gallons/ litres)	Heavy Fuel Oil (gallons/ litres)	Diesel Fuel Oil (gallons/ litres)
1973	644902	1660246	167212708	944480
1974	668040	1683631	239219627	912021
1975	628614	3146866	255779865	859119
1976	801346	1577980	254464840	12570017
1977	675755	1243032	257520620	2698770
1978	738067	1002909	283355560	1229670
1979	899459	1199706	238231595	639377
1980	1504060	1110944	216640000	457416
1980	1364460	5050541	984864938	2079454

billions of BTUs/trillions of joules

	Coal	Light Fuel Oil	Heavy Fuel Oil	Diesel Fuel Oil	Total	Total Metric Equivalent
1973	16251	276	30038	157	46722	49274
1974	16835	280	41356	151	58622	61824
1975	15841	523	45948	143	62455	65866
1976	20193	263	45712	2093	68261	71989
1977	16575	206	46261	449	63491	66959
1978	19733	167	50902	205	71007	74885
1979	22666	200	42796	107	65769	69361
1980	37902	185	38917	76	77080	81289
1980	39972	193	41042	80	81289	-

Figures include fuel used to generate steam
Shaded area represents metric equivalent
Source: Nova Scotia Power Corporation


FUEL USED TO GENERATE ELECTRICITY (N.S.P.C.)
1973—1980
HEAVY FUEL OIL
COAL
MIDDLE DISTILLATE
BTU x 10^12
JOULES x 10^15
70
60
50
40
30
20
10
0
67
60
50
40
30
20
10
0
1973
1974
1975
1976
1977
1978
1979
1980
YEAR

NET GENERATING
CAPACITY
ATLANTIC PROVINCES

The net generating capacity refers to the amount of power available from all generating sources during the one hour of the year in which demand for power reaches its peak. Figures show that in Nova Scotia this net generating capacity has increased at an annual rate of 8.2% during the period 1971-1980. This reflects the addition of new thermal generating units at 8 thermal generating stations.

Net Generating Capacity - Atlantic Provinces, 1971-1980

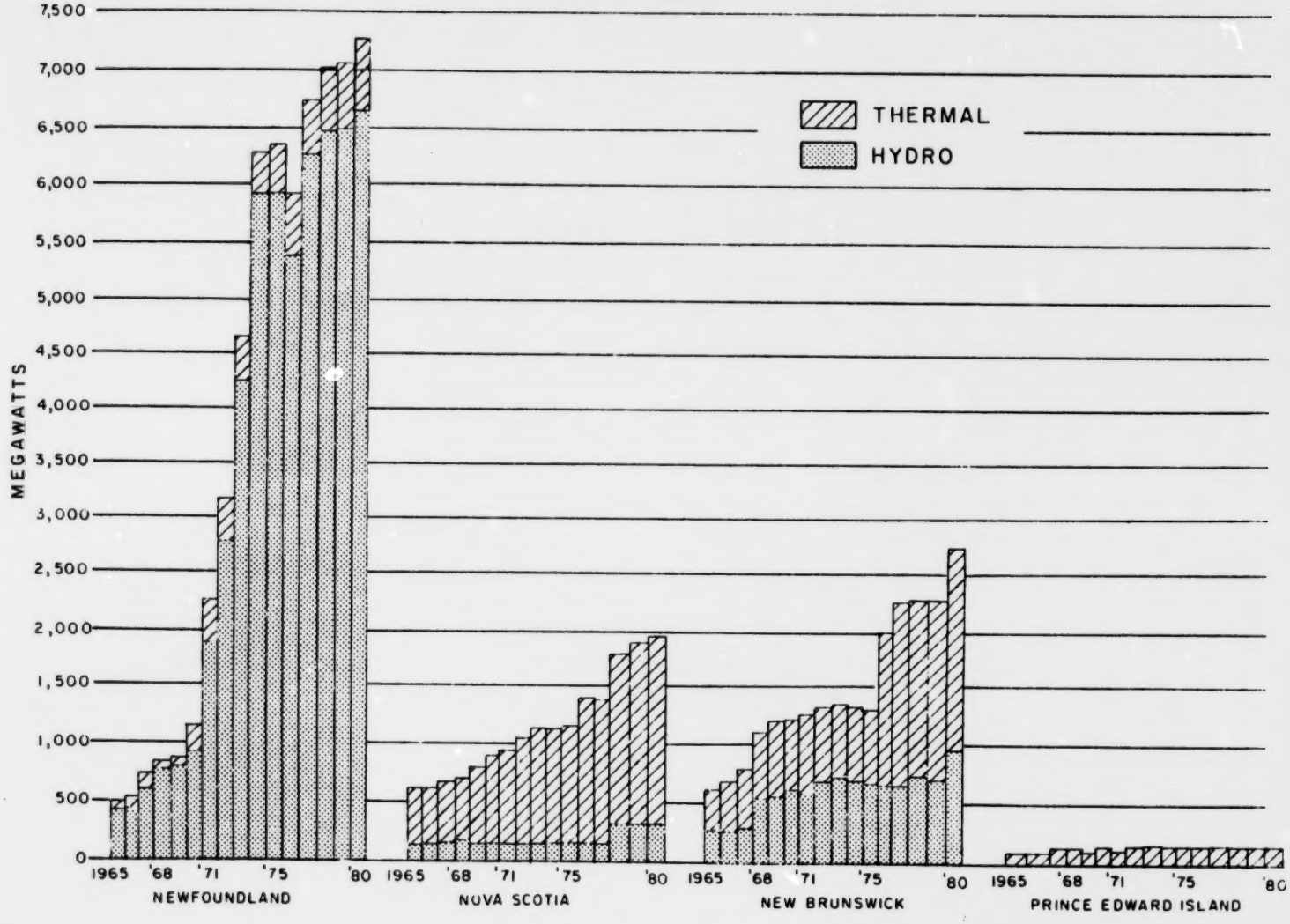
(Megawatts)

	Nova Scotia			Newfoundland			Prince Edward Island			New Brunswick		
	Hydro	Thermal	Net G. Cap.	Hydro	Thermal	Net G. Cap.	Hydro	Thermal	Net G. Cap.	Hydro	Thermal	Net G. Cap.
1971	160	795	955	1,899	390	2,289	0	87	87	580	652	1,232
1972	160	893	1,053	2,824	376	3,200	0	87	87	683	648	1,331
1973	159	995	1,154	4,270	384	4,654	0	87	89	684	649	1,333
1974	159	995	1,154	5,919	392	6,311	0	114	114	683	642	1,325
1975	159	1,020	1,179	5,919	443	6,362	0	113	113	669	619	1,288
1976	159	1,314	1,473	5,441	470	5,911	0	113	113	673	1,294	1,967
1977	159	1,308	1,467	6,364	410	6,774	0	112	112	673	1,634	2,307
1978	356	1,305	1,661	6,502	501	7,003	0	112	112	698	1,637	2,335
1979	356	1,452	1,808	6,493	550	7,043	0	112	112	675	1,660	2,335
1980	376	1,559	1,935	6,640	697	7,337	0	112	112	890	1,837	2,727

Source: Electric Power Statistics, Volume I, Annual Electric Power Survey of Capability and Load Statistics Canada Catalogue No. 57-204

NET GENERATING CAPACITY BY PROVINCE

1965-1980

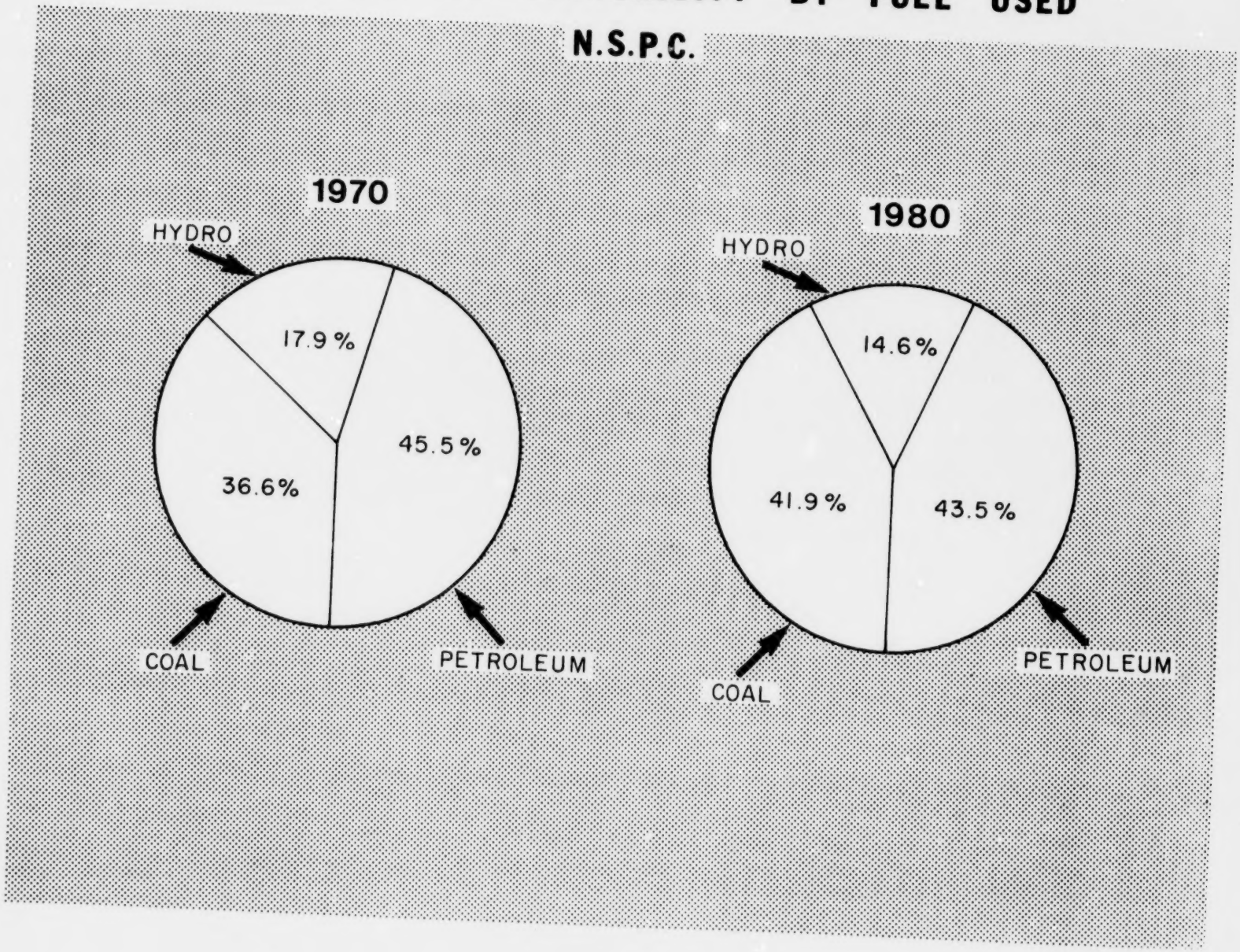


NOVA SCOTIA
TYPES OF
ELECTRICAL
GENERATION

In Nova Scotia, electricity is generated by two methods. A limited amount of generation is from hydro-electrical sources while the greater percentage is of thermal origin. Coal and petroleum products are the fuel types used in the thermal generating plants. The following diagram illustrates the shift that has taken place in the composition of electrical generation since 1970. During this period, dependence on foreign oil increased from 45.5% in 1970 to a high of 68.3% in 1975. This percentage declined, however, from 68.1% in 1978, to 56.1% in 1979, and to 43.5% in 1980.

GENERATION OF ELECTRICITY BY FUEL USED

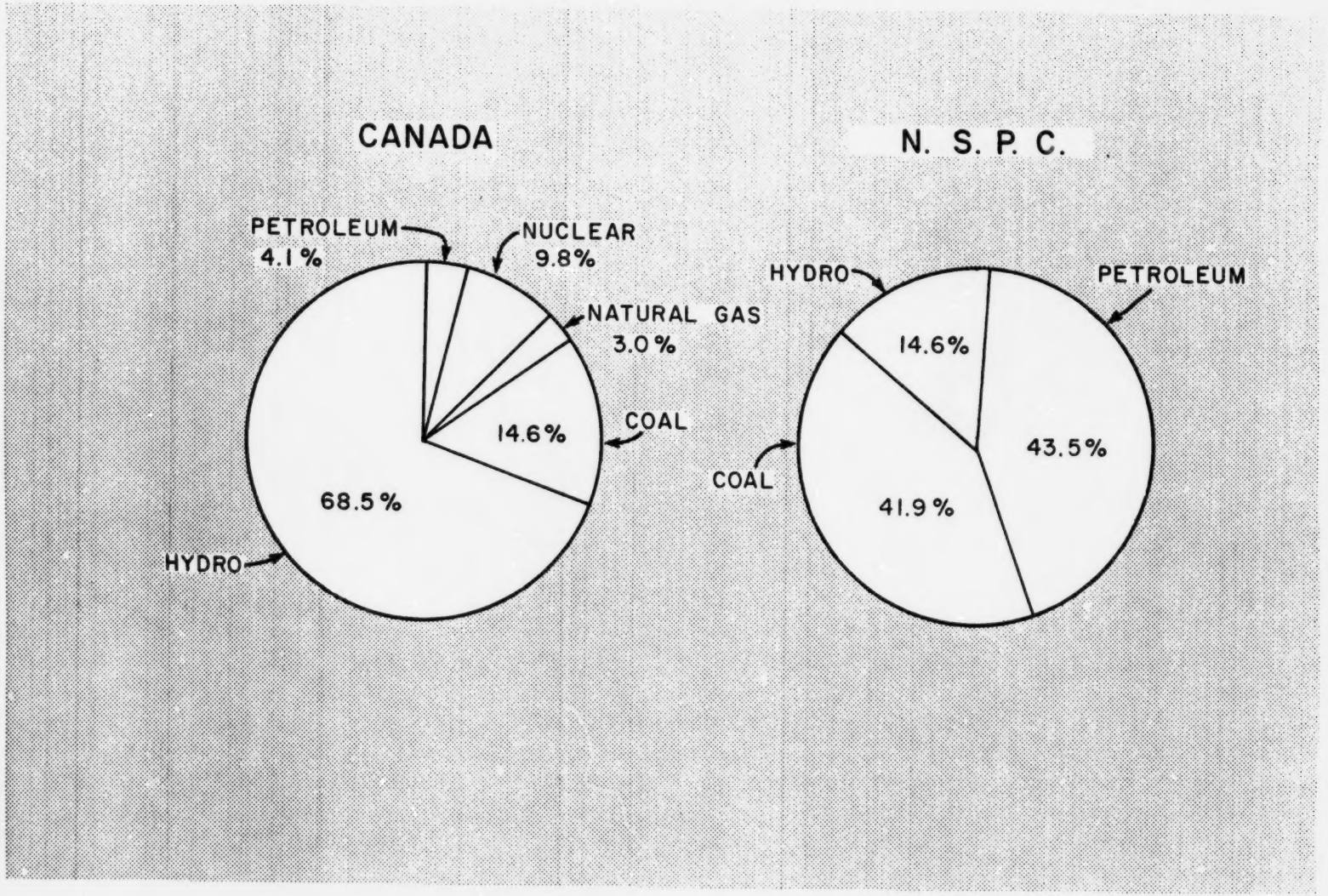
N.S.P.C.



GENERATION OF
ELECTRICITY
BY FUEL USED

The pie diagrams on the next page show the marked difference in the mix of fuels used by the Nova Scotia Power Corporation and Canada to generate electricity in 1980. In Canada as a whole, hydro electric power accounts for over 68% of total generation. Nova Scotia Power Corporation is still dependent on oil-fired generation for 43.5% of its electric power output. This dependence on foreign oil has pushed the cost of electricity to consumers in Nova Scotia above the national average.

GENERATION OF ELECTRICITY BY FUEL USED
1980



NOVA SCOTIA
CONSUMPTION
OF ELECTRICITY
BY SECTOR

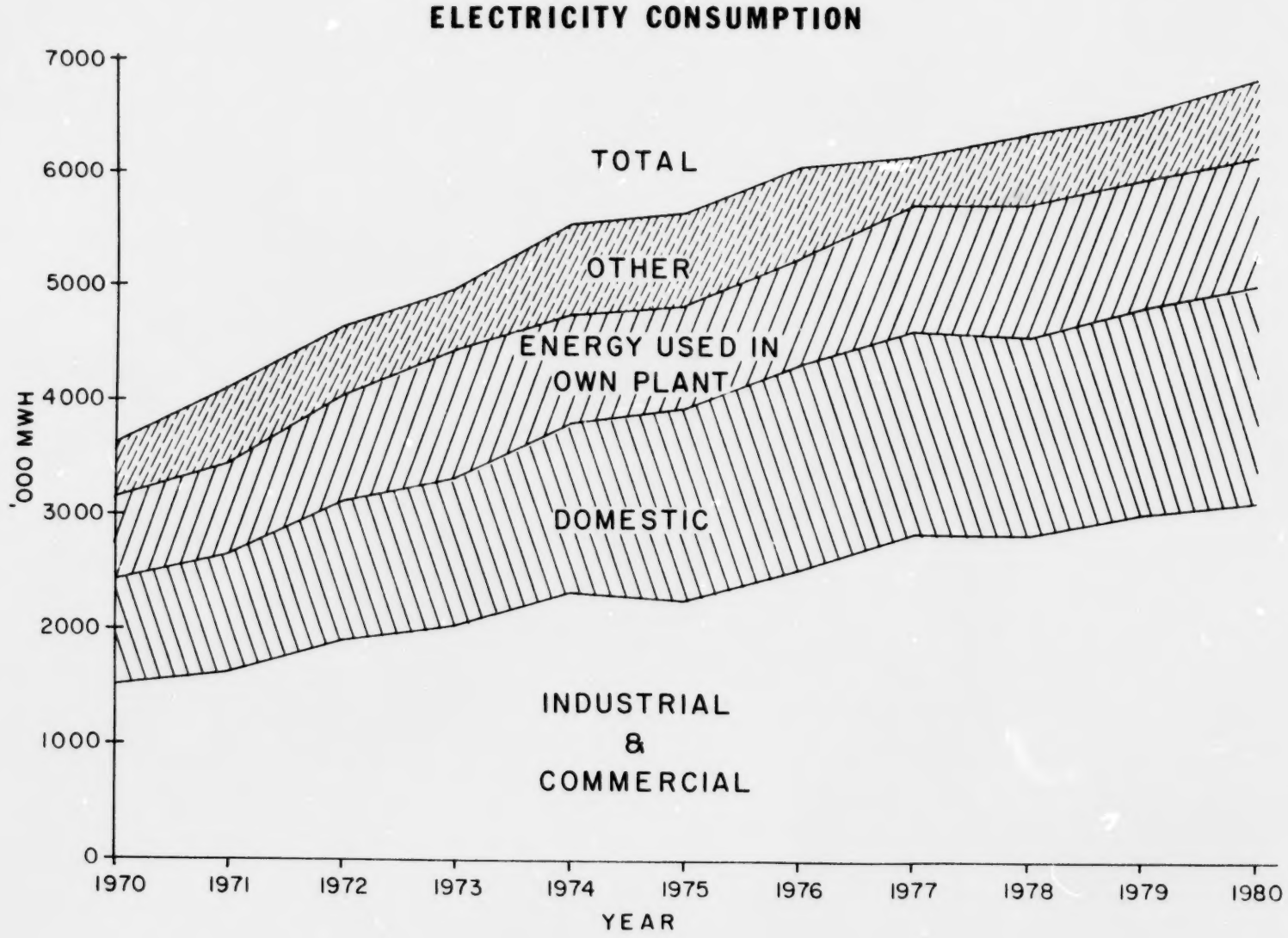
In 1980, consumption of electricity in Nova Scotia totalled approximately 6,809 gigawatt hours (GWh), a 4.5% increase over 1979. The industrial and commercial sectors were the largest consumers, accounting for 46.0% of the total between them. The domestic sector consumed 27.4%, while the category "energy used in own plant", which takes into account electricity used by companies with their own electrical generating facilities, accounted for an additional 16.9% of total consumption.

Electricity Consumption, by Sector, 1975-1980

(Megawatt Hours)

	1975	1976	1977	1978	1979	1980
Domestic	1,682,828	1,784,557	1,768,814	1,748,847	1,824,520	1,868,462
Industrial & Commercial	2,272,234	2,525,926	2,856,240	2,830,917	3,004,740	3,133,264
Street Lighting	49,313	59,525	62,544	65,731	67,923	69,244
Total N.S. Sales	4,004,375	4,370,008	4,687,598	4,645,495	4,897,183	5,070,970
Energy Used in own Plant	883,648	927,141	1,079,730	1,128,257	1,128,902	1,152,181
Losses & Other	774,256	738,449	356,266	579,875	491,012	585,928
Total N.S. Consumption	5,662,279	6,035,598	6,123,594	6,353,627	6,517,087	6,809,079

Source: Electric Power Statistics
Statistics Canada Catalogue No. 57-001


ELECTRICITY CONSUMPTION
7000
6000
5000
4000
3000
2000
1000
0
'000 MWH
TOTAL
OTHER
ENERGY USED IN
OWN PLANT
DOMESTIC
INDUSTRIAL
&
COMMERCIAL
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
YEAR

COAL

INTRODUCTION

The production of coal in Nova Scotia has been steadily increasing over the last eight years. Coal has been identified as the most promising conventional energy source for Nova Scotia in that it is an indigenous, and therefore a secure resource. Large coal reserves exist within Nova Scotia and this coal will provide displacement of foreign oil within the next decade. Currently, the Nova Scotia Power Corporation is the largest single consumer of coal. In 1980, 1,504,060 short tons were used in the generation of electric power, an increase of 103.8% since 1978. A more detailed analysis of Nova Scotia's coal industry will be *presented in this section.*

NOVA SCOTIA
COAL
RESOURCES

Exploration programs completed by the Province of Nova Scotia indicate that there are more than 3.5 billion tons of coal present in various coal basins within the Province. More than 90% of these resources are found in the Sydney coalfield.

The variability of thickness, quality and quantity of coals in the various basins poses serious constraints on the eventual mineability of particular seams. Because of these constraints it is estimated that only about one-third, or approximately 1.2 billion tons can eventually be extracted.

Nova Scotia Estimates of Total Coal Resources

Location	Total Resource (millions of short tons)	Potential Recoverable Resources (millions of short tons)	% Recoverable
Sydney Coalfield	3,200 Open Pit: 30	1,000 Open Pit: 20	31% 67
Pictou Coalfield	70	Open Pit: 10 Other: 20	43%
Port Hood Basin	35	15	43%
Chimney Corner	4	1	25%
Mabou	160 (estimated)	80 (estimated)	50%
Inverness	0.5	0.1	20%
St. Rose	6	3	50%
Debert	3.5	Open Pit: 0.25 Other: 1.0	36%
River Herbert	2	Open Pit: 0.2 Other: 0.1	15%
Springhill	50	Open Pit: 0.6 Other: 20	41%
TOTAL	3,561.00	1,171.25	33%

NOVA SCOTIA
COAL
PRODUCTION
AND SHIPMENTS

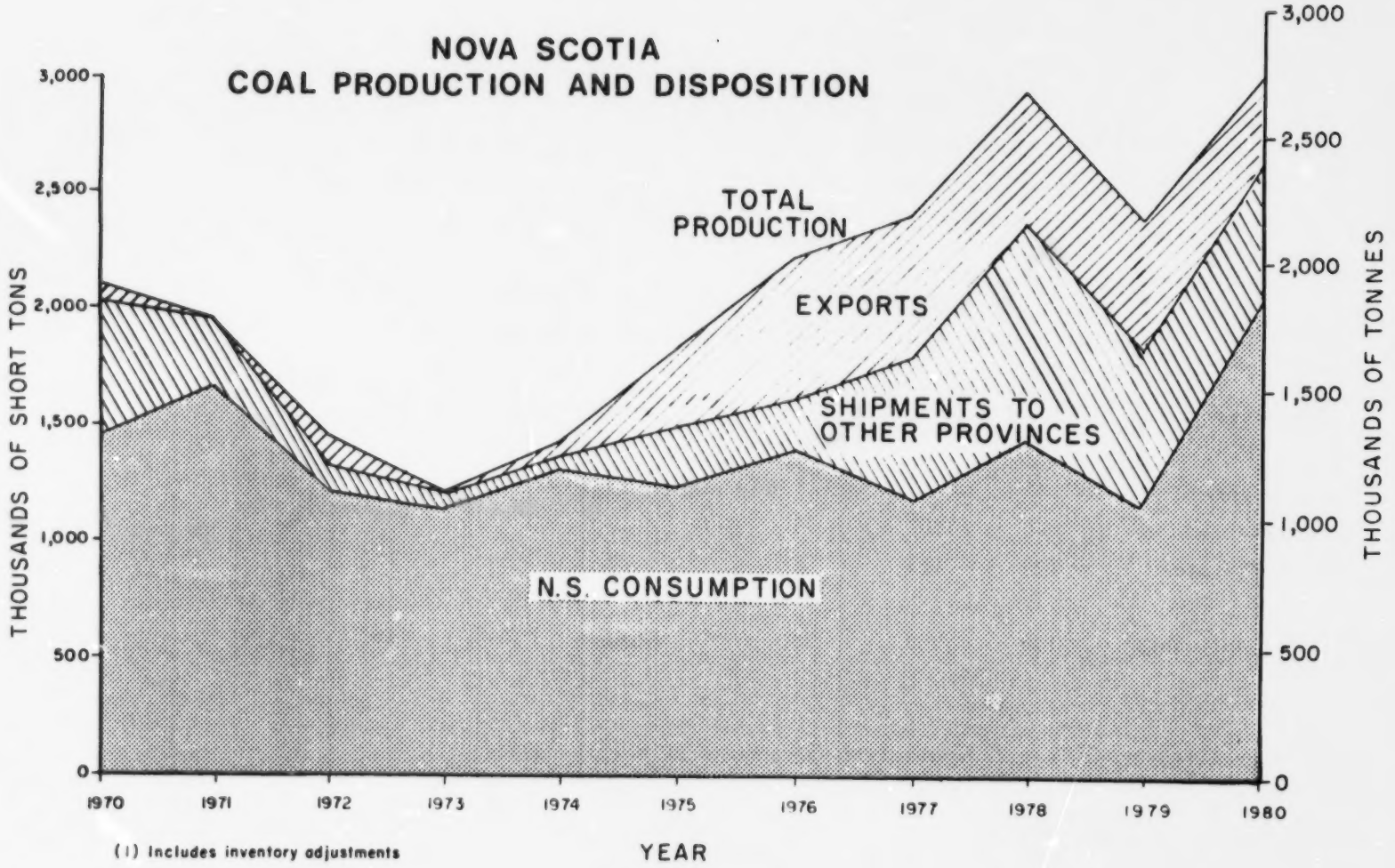
During 1980, coal production increased by 26.3% over the previous year. Shipments to other provinces fell 63.7%, while exports increased 9.4% in 1980. The opening inventory at the beginning of the year was approximately equal to the closing inventory at year end.

Nova Scotia Production of Coal and Out of Province Shipments, 1973-1980
(thousands of short tons/thousands of metric tonnes)

	1973	1974	1975	1976	1977	1978	1979	1980	1980
Production	1175	1410	1975	2204	2386	2921	2379	3005	2726
Shipments to Other Provinces	91	106	278	217	635	926	637	231	210
Exports	—	26	377	616	601	570	551	603	547
Total Out of Province Shipments	91	132	655	833	1236	1496	1188	834	757

Shaded area represents metric equivalents (thousands of metric tonnes)

Source: Coal and Coke Statistics
Statistics Canada Catalogue No. 45-002


NOVA SCOTIA
COAL PRODUCTION AND DISPOSITION
TOTAL PRODUCTION
EXPORTS
SHIPMENTS TO OTHER PROVINCES
N.S. CONSUMPTION
THOUSANDS OF SHORT TONS
THOUSANDS OF TONNES
3,000
2,500
2,000
1,500
1,000
500
0
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
YEAR
(1) Includes inventory adjustments

COAL
SHIPMENTS
INTO
NOVA SCOTIA

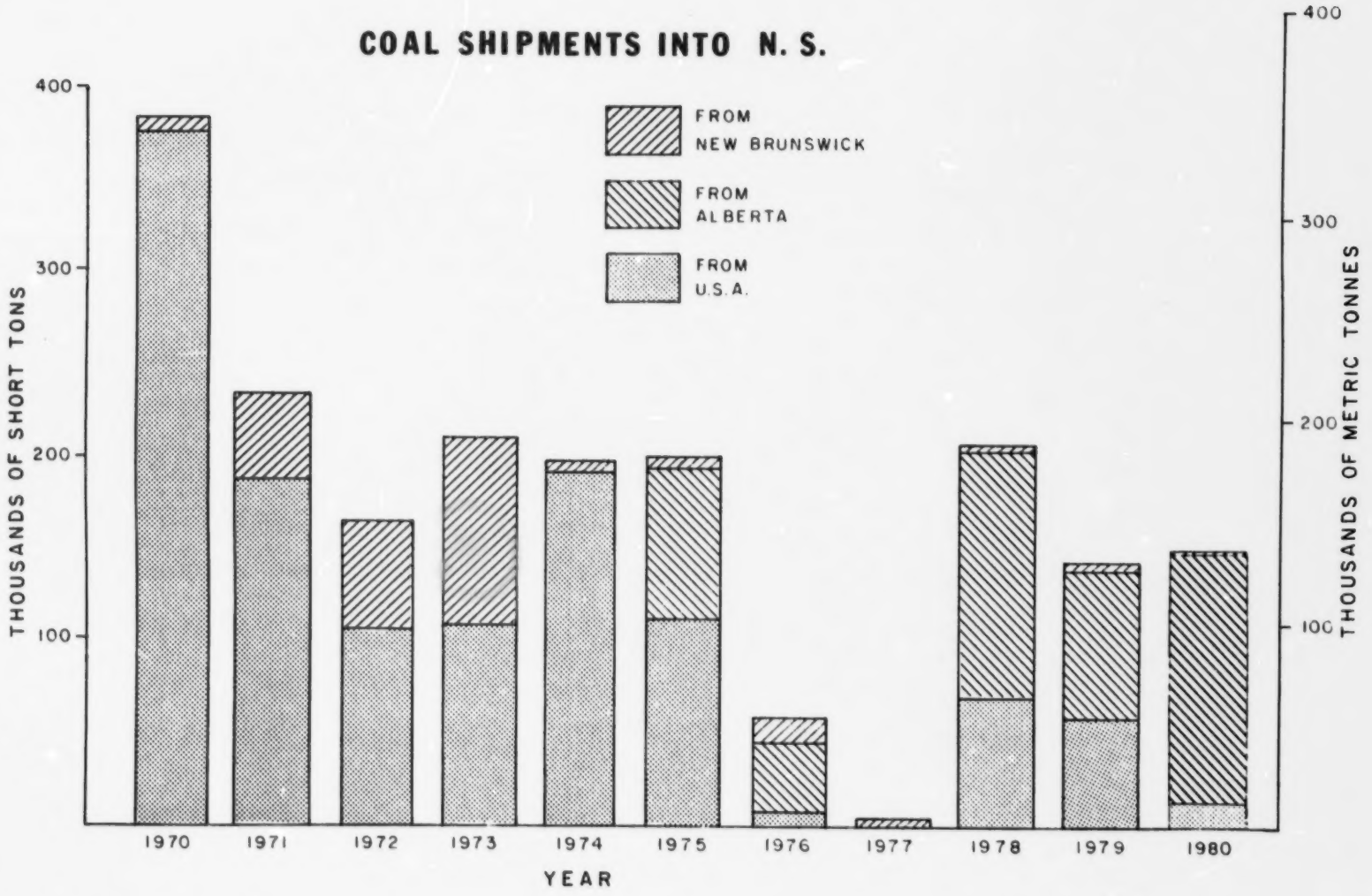
The Sydney Steel Corporation requires a certain amount of low volatile coal for coking purposes. Since Cape Breton coal is highly volatile, it is necessary to import quantities of less volatile coal to mix with the coal produced locally.

Coal Shipments Into Nova Scotia, 1974-1980
(thousands of short tons/thousands of metric tonnes)

Shipments from:	1974	1975	1976	1977	1978	1979	1980	1980
New Brunswick	5	5	11	4	3	3	1	1
Alberta	0	82	39	0	135	85	133	121
United States	194	113	8	0	68	56	12	11
Total Shipments	199	200	58	4	206	144	146	133

Shaded area represents metric equivalent (thousands of metric tonnes)

Source: Coal and Coke Statistics
Statistics Canada Catalogue No. 45-002


COAL SHIPMENTS INTO N. S.
FROM NEW BRUNSWICK
FROM ALBERTA
FROM U.S.A.
THOUSANDS OF SHORT TONS
THOUSANDS OF METRIC TONNES
400
300
200
100
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
YEAR

NOVA SCOTIA
COAL
CONSUMPTION

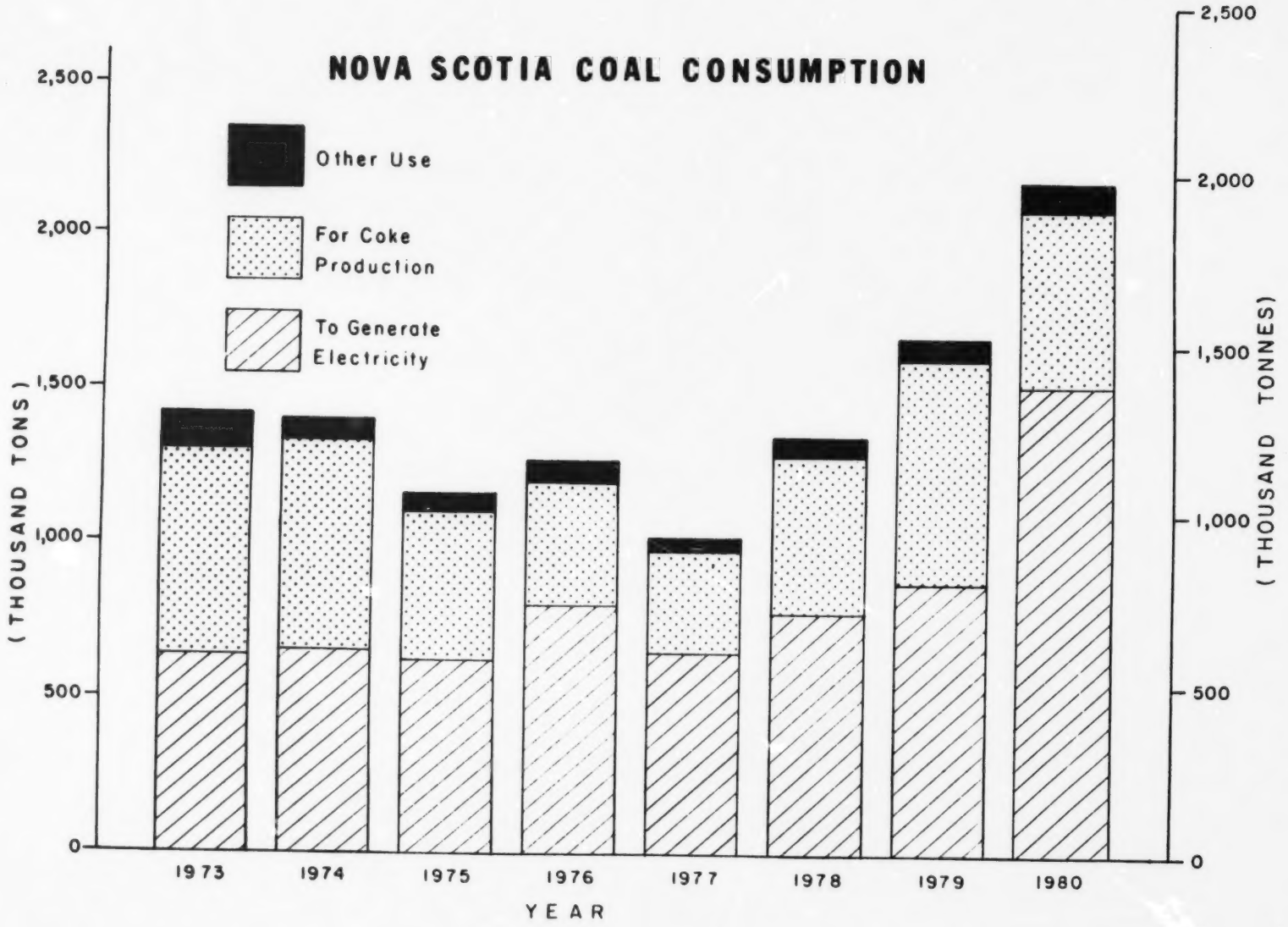
The gross coal consumption in Nova Scotia is calculated by adjusting total production for opening and closing inventories, adding imports and shipments from other provinces and subtracting exports and shipments to other provinces. In 1980 consumption increased by 36.5%. Most of the increase can be accounted for by the two major consumers, the Nova Scotia Power Corporation and the Sydney Steel Corporation (SYSCO).

Nova Scotia Coal Consumption, 1973-1980
(thousands of short tons/thousands of metric tonnes)

	1973	1974	1975	1976	1977	1978	1979	1980	1980
Consumption	1,414	1,400	1,615	1,279	1,019	1,367	1,685	2,300	2,087

Shaded area represents metric equivalents (thousands of metric tonnes)

Source: Coal and Coke Statistics
Statistics Canada Catalogue No. 45-002


NOVA SCOTIA COAL CONSUMPTION
Other Use
For Coke Production
To Generate Electricity
2,500
2,000
1,500
1,000
500
0
(THOUSAND TONS)
(THOUSAND TONNES)
1973
1974
1975
1976
1977
1978
1979
1980
YEAR

NOVA SCOTIA
COAL USED
TO GENERATE
ELECTRICITY

The Nova Scotia Power Corporation is the largest consumer of Nova Scotia coal. During 1980, 1,504,060 short tons of coal were used to generate electricity and steam. This represented a significant increase over the use of coal in 1979. This increase can be attributed to the addition of the coal fired generating station, Lingan I in mid 1979. A further increase in coal use by the Power Corporation resulted from Lingan II coming on stream in 1980.

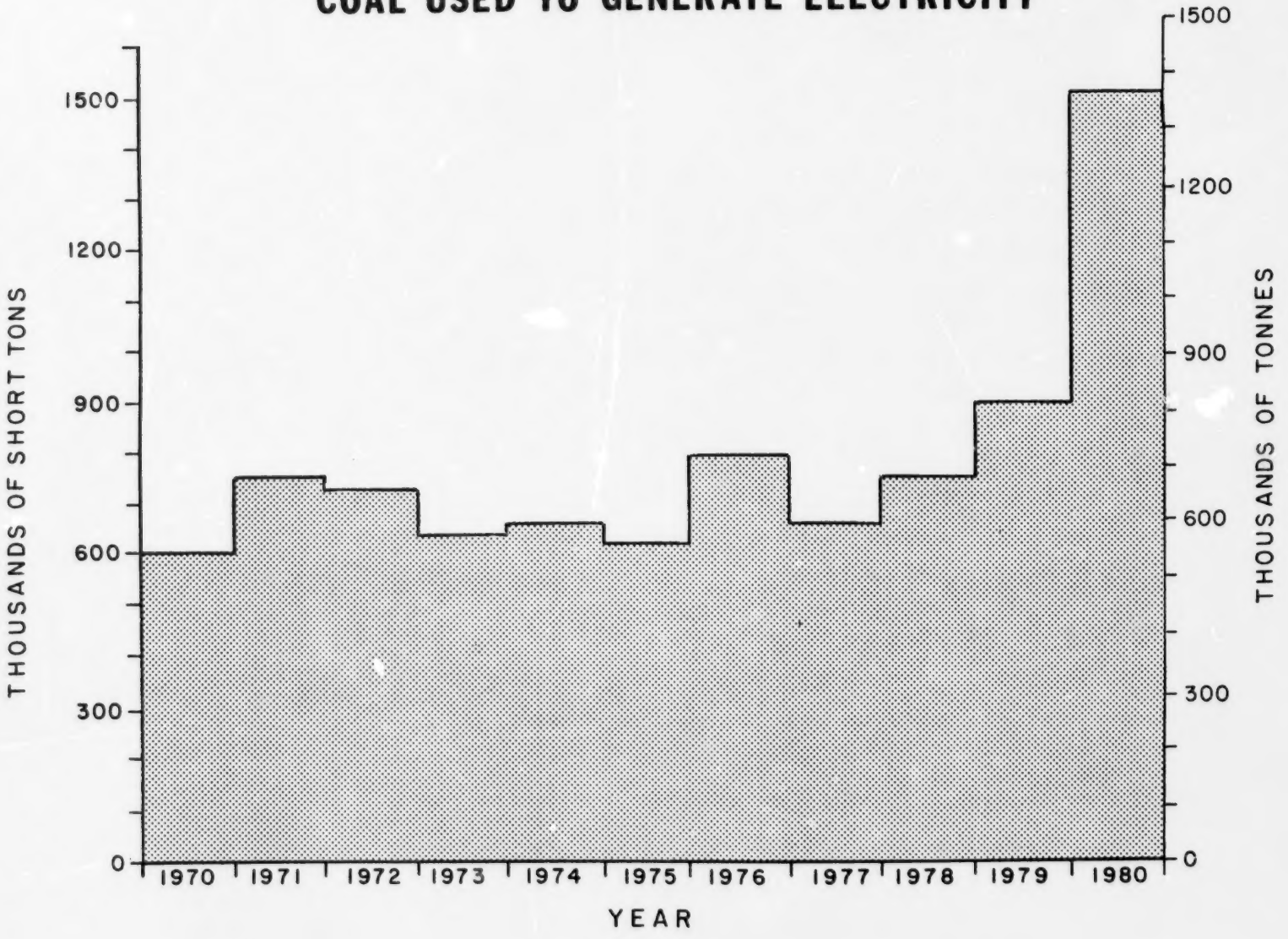
Coal Used to Generate Electricity in Nova Scotia, 1973-1980
(thousands of short tons/thousands of metric tonnes)

	1973	1974	1975	1976	1977	1978	1979	1980	1980
Amount	645	668	628	801	658	783	899	1,504	1,364

Shaded area represents metric equivalent (thousands of metric tonnes)

Source: Thermal Production Division, Nova Scotia Power Corporation

COAL USED TO GENERATE ELECTRICITY



NOVA SCOTIA

COKE

INDUSTRY

The second major use for Nova Scotia coal is in the production of coke by the Sydney Steel Corporation. In 1980, coal purchased for this purpose amounted to approximately 750,000 short tons .

Demand for Coal by Coke Plants, 1973-1980*

(thousands of short tons/thousands of metric tonnes)

	1973	1974	1975	1976	1977	1978	1979	1980	1980
Amount	670	724	619	401	367	504	727	751	681

*Includes coal used to produce manufactured gases

*Not necessarily used during the same year

Shaded area represents metric equivalent (thousands of metric tonnes)

Sources: Coal Mines
Statistics Canada Catalogue No. 26-006

Quarterly Report on Energy Supply-Demand in Canada
Statistics Canada Catalogue No. 57-003, 1980 - IV

NOVA SCOTIA
COKE PRODUCTION
AND CONSUMPTION

Coke production increased slightly during 1980, exceeding the 1974 level of production. The consumption of coke in Nova Scotia is directly related to the production of steel by the Sydney Steel Corporation. Coke consumption fell during 1980, reflecting the difficulties faced by the industry.

Nova Scotia Coke Production and Consumption, 1973 - 1980

(thousands of short tons/thousands of metric tonnes)

	1973	1974	1975	1976	1977	1978	1979	1980	1980
Coke Production	439	510	398	286	231	324	495	518	470
Coke Consumption	366	487	376	261	238	328	466	359	325

Shaded area represents metric equivalents

Source[1] : Quarterly Report on Energy Supply-Demand in Canada
Statistics Canada Catalogue No. 57-003

(1) Figures were obtained from Sysco for the years 1973 to 1978

DOMESTIC ENERGY CONSUMPTION IN NOVA SCOTIA

INTRODUCTION

Whereas the previous sections of this report have been concerned with a broad approach to the Nova Scotia energy picture, the following pages will deal with energy use within the domestic sector. A breakdown of energy consumption in the "typical" household unit is examined.

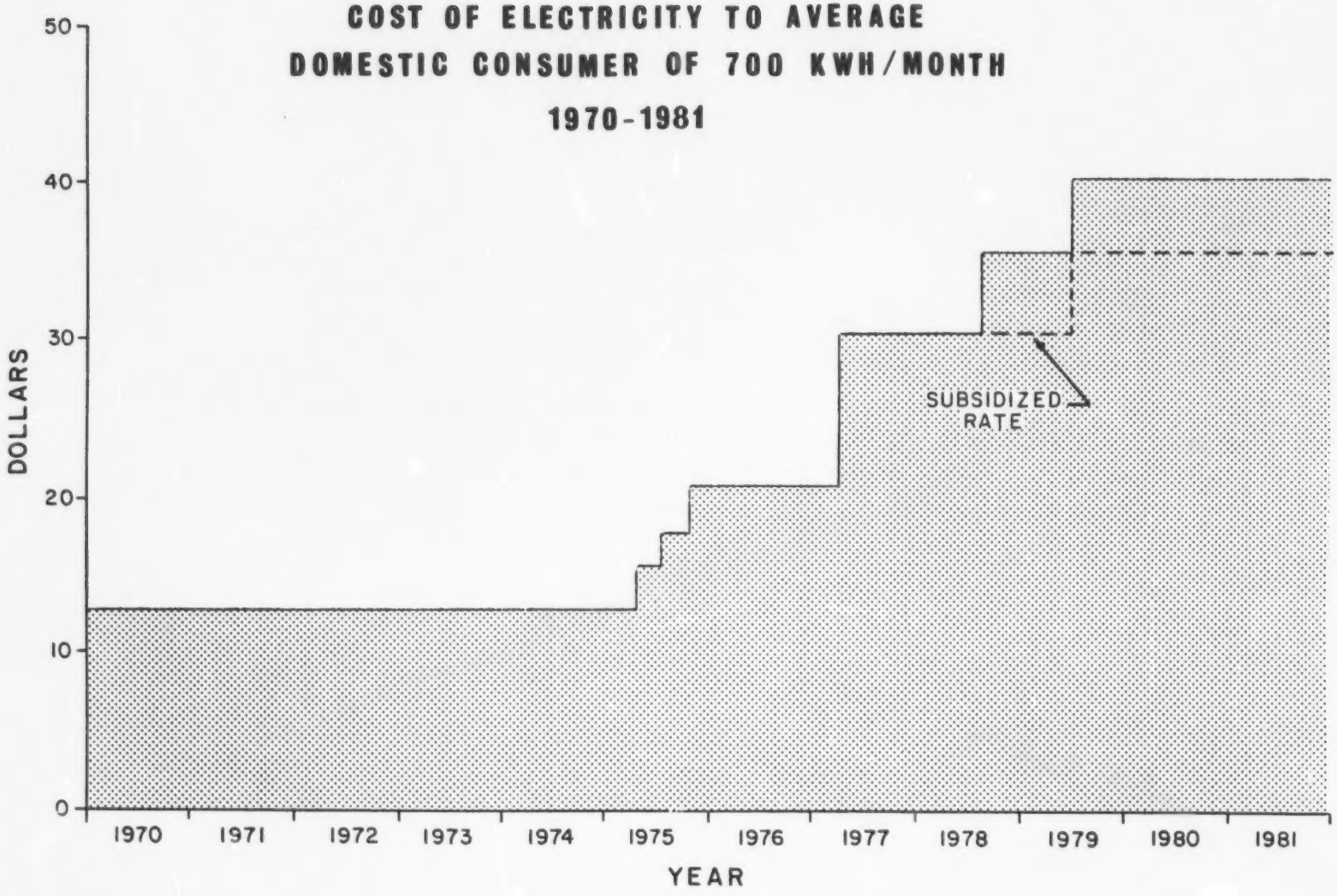
Nova Scotia Electric Power Rates - Domestic Users

Effective Date	April 15/59	July 1/75	March 2/77	August 2/78		June18/79	
				Unsubsidized	Subsidized	Unsubsidized	Subsidized
Basic Charge/month ($/month)	$1.50	$2.00	$3.95	$4.40	$3.95	$4.99	$4.54
1st 100 kWh/month (¢/kWh)		3.0					
1st 200 kWh/month (¢/kWh)	2.5		4.4	4.75	4.4	5.39	5.04
Next 100 kWh/month (¢/kWh)		2.0					
Next 500 kWh/month (¢/kWh)			3.5	4.27	3.5	4.85	4.08
Additional Use (¢/kWh)	1.2	1.5	3.25	4.15	4.15	4.71	4.71

Fuel adjustment charge:

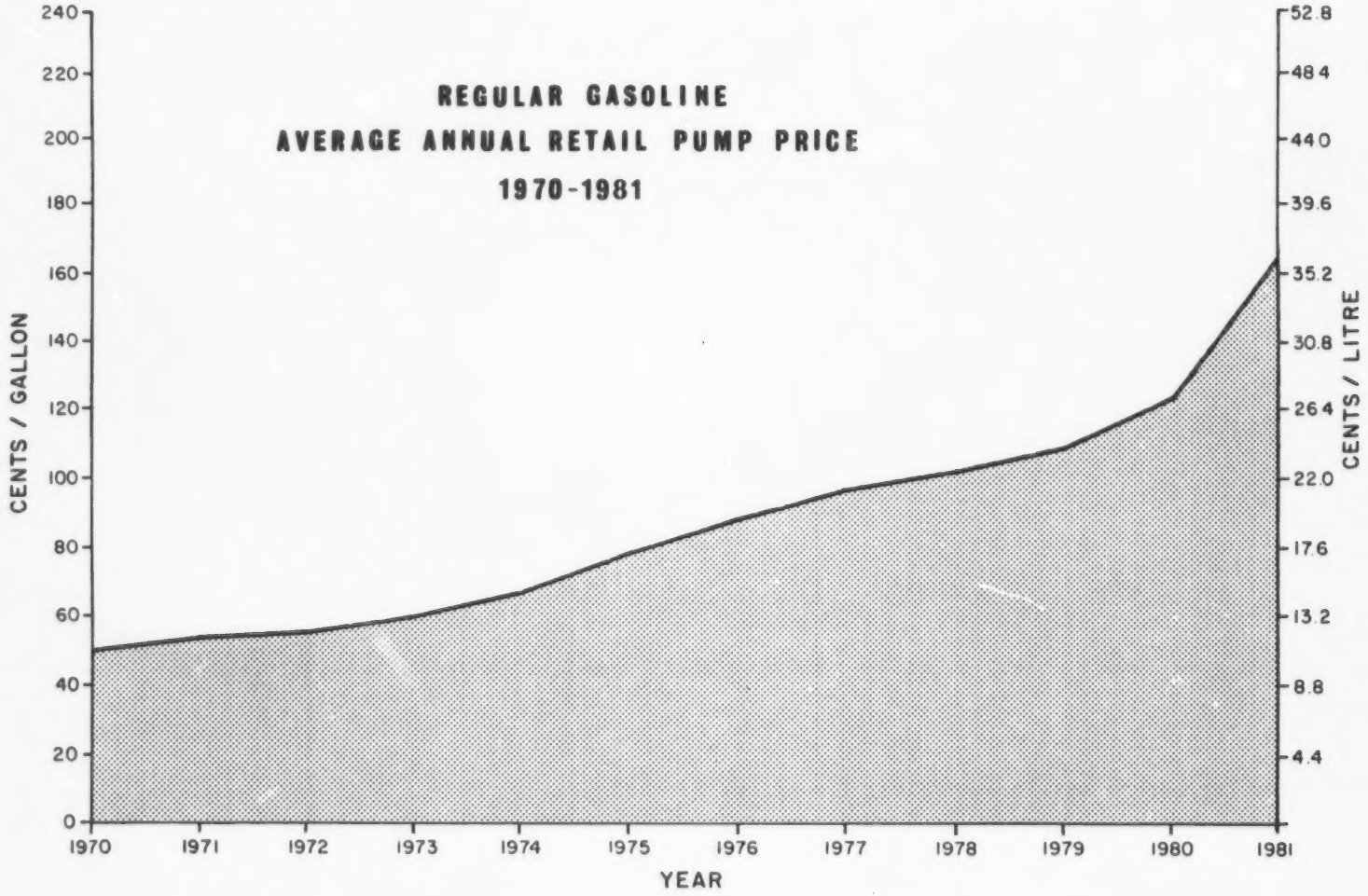
1. Effective April 1, 1975 .4314¢/kWh
   October 1, 1975 .8233¢/kWh

2. Fuel Adjustment Charge dropped March 2, 1977


COST OF ELECTRICITY TO AVERAGE
DOMESTIC CONSUMER OF 700 KWH/MONTH
1970-1981
DOLLARS
50
40
30
20
10
0
SUBSIDIZED
RATE
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
YEAR

NOVA SCOTIA
MOTOR GASOLINE
PRICES

Motor gasoline prices, as well as those of all other refined petroleum products have experienced steep price increases due to rising crude oil prices. Normally, when the price of crude oil increases by $1.00/bbl, a corresponding increase of approximately 0.7-0.98¢/litre or 3.2-3.9¢/gallon can be expected in each refined petroleum product. With the price of motor gasoline increasing, the consumer has opted for smaller, more fuel-efficient vehicles.


REGULAR GASOLINE
AVERAGE ANNUAL RETAIL PUMP PRICE
1970-1981
CENTS / GALLON
CENTS / LITRE
YEAR
240
220
200
180
160
140
120
100
80
60
40
20
0
52.8
48.4
44.0
39.6
35.2
30.8
26.4
22.0
17.6
13.2
8.8
4.4
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981

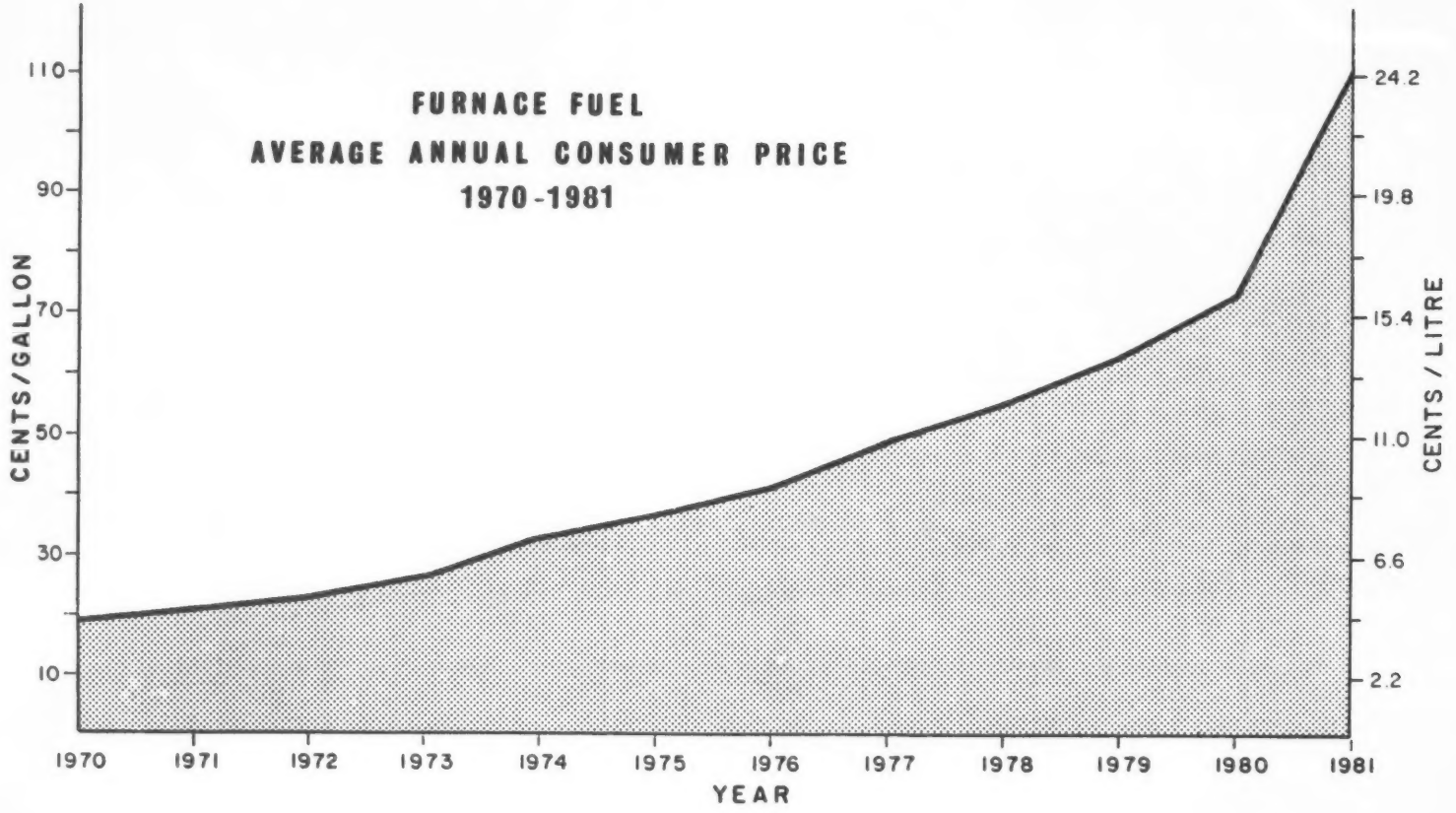
NOVA SCOTIA
FURNACE FUEL
OIL PRICES

Since 1974, the price of furnace fuel oil has more than tripled. The impact of these higher prices on the consumer is obviously reflected by the decline in home heating fuel demand during the last few years.

Furnace Fuel Oil Average Annual Price, 1974 - 1981
(cents per gallon/cents per litre)

	1974	1975	1976	1977	1978	1979	1980	1981	1981
Price	34.1	36.2	41.7	49.2	56.7	63.7	77.0	110.8	24.4

Shaded area represents metric equivalent (cents per litre)


FURNACE FUEL
AVERAGE ANNUAL CONSUMER PRICE
1970-1981
CENTS/GALLON
110
90
70
50
30
10
24.2
19.8
15.4
11.0
6.6
2.2
CENTS / LITRE
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
YEAR

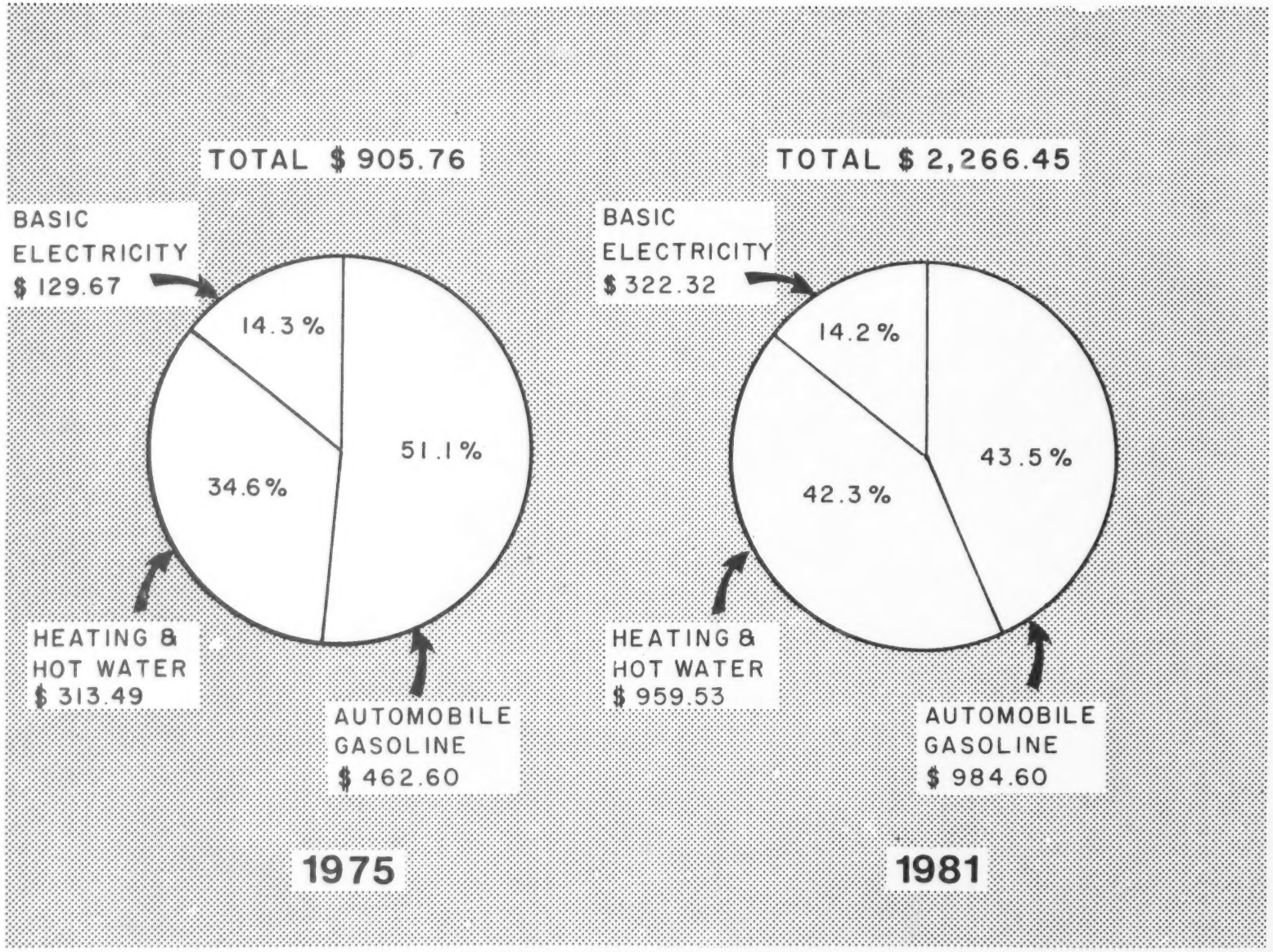
HOUSEHOLD
EXPENDITURE
ON ENERGY

The following table illustrates the energy expenditure breakdown of a representative Nova Scotia household. In order to arrive at this breakdown, the following assumptions were made on what constituted a representative household:

1) The household used 2,727 litres (600 gallons) of gasoline annually for driving.
2) The household consumed 6,000 kWh of electricity annually at a constant rate of 500 kWh per month.
3) Space heating and hot-water heating were provided by furnace oil. An annual amount of 3,931 litres (866 gallons) was required for these purposes.

	1975	1976	1977	1978	1979	1980	1981
Space Heating & Hot Water	$313.49	$361.12	$426.07	$491.02	$551.64	$666.82	$959.53
Basic electricity	129.67	138.00	255.50	279.00	302.38	322.32	322.32
Automobile	462.60	528.60	579.60	622.80	653.40	747.60	984.60
Total Energy Expenditures	905.76	1,027.72	1,261.17	1,392.82	1,507.42	1,736.74	2,266.45
Consumer Price Index (All items - Halifax) (1971 = 100)	136.8	148.3	159.8	172.1	187.4	207.5	232.0

HOUSEHOLD EXPENDITURE ON ENERGY



APPENDIX

British Thermal Unit (BTU)

The amount of heat that must be added to one pound of water to raise the temperature by 1° Fahrenheit under stated conditions of temperature and pressure.

Joule (J)

The equivalent of .23895 calories, where 1 calorie is the amount of heat required to raise the temperature of 1 gram of water from 14.5° Celsius to 15.5° Celsius under 1 atmosphere of pressure.

Megawatt (MW)

One thousand kilowatts.

Net Generating Capacity

The expected power of all available generating facilities of the province during the one hour of the year in which demand for power reaches its peak.

Net Sales

Final demand for use within a defined geographical area.

Primary Energy Consumption (Gross Energy Consumption)

Total energy inputs into the economy, including petroleum, coal, natural gas and electricity generated by hydroelectric, nuclear and geothermal power plants. Conversion losses are included in this consumption.

Total End Use Energy Consumption

Inputs into the final consuming sectors, domestic and farm, commercial, industrial and transportation; consisting of direct fuels and electricity distributed from the electric power sector. Conversion losses are included in this consumption.

ENERGY CONVERSION
TABLES

Conversion Factors

From/ Into	Metric Tonnes	Long Tons	Short Tons	Barrels Petroleum	Kilolitres (cubic meters)	1,000 gallons (Imperial)	1,000 gallons (U.S.A.)
	Multiply by						
Metric Tons x	1	0.984	1.102	7.33	1.16	0.256	0.308
Lorg Tons x	1.016	1	1.120	7.45	1.18	.261	.313
Short Tons x	.907	.893	1	6.65	1.05	.233	.279
Barrels (Petroleum) x	.136	.134	.150	1	.159	.035	.042
Kilolitres (cubic metres) x	.863	.849	.951	6.29	1	.220	.264
1,000 gallons (Imperial) x	3.91	3.83	4.29	28.6	4.55	1	1.201
1,000 gallons (U.S.A.) x	3.25	3.19	3.58	23.8	3.79	.833	1

BTU EQUIVALENTS OF COMMON FUELS

Fuel Type	Natural Unit	Conversion Factor millions of BTUs
Coal:		
Anthracite	short ton of 2,000 pounds	25.4000
Imported Bituminous	short ton of 2,000 pounds	25.8000
Canadian Bituminous	short ton of 2,000 pounds	25.2000
Sub-Bituminous	short ton of 2,000 pounds	17.000
Lignite	short ton of 2,000 pounds	13.2000
Coke	short ton of 2,000 pounds	24.8000
Coke Oven Gas	thousands of cubic feet	0.5000
Liquified Petroleum Gases	barrel of 35 Canadian gallons	4.0950
Crude Oil	barrel of 35 Canadian gallons	5.8030
Still Gas*	barrel of 35 Canadian gallons	6.2874
Motor Gasoline	barrel of 35 Canadian gallons	5.2220
Kerosene	barrel of 35 Canadian gallons	5.6770
Diesel	barrel of 35 Canadian gallons	5.8275
Light Fuel Oil	barrel of 35 Canadian gallons	5.8275
Heavy Fuel Oil	barrel of 35 Canadian gallons	6.2874
Petroleum Coke	barrel of 35 Canadian gallons	6.3852
Aviation Gasoline	barrel of 35 Canadian gallons	5.0505
Aviation Turbo Fuel	barrel of 35 Canadian gallons	5.4145
Natural Gas	thousands of cubic feet	1.0000
Electricity (use)	thousands of kilowatt hours	3.4120
Electricity (output)	thousands of kilowatt hours	10.0000

* Still gas is expressed in barrels of heavy fuel oil equivalent

TERAJOULE EQUIVALENT OF COMMON FUELS

Fuel Type	Natural Unit	Conversion Factor (terajoules)
Coal:		
Anthracite	kilotonnes	29.53
Imported Bituminous	kilotonnes	29.99
Canadian Bituminous	kilotonnes	29.30
Sub-Bituminous	kilotonnes	19.76
Lignite	kilotonnes	15.35
Coke	kilotonnes	28.83
Coke Oven Gas	gigalitres	18.61
Liquified Petroleum Gases	megalitres	27.12
Crude Oil	megalitres	38.51
Still Gas	megalitres	41.73
Motor Gasoline	megalitres	34.66
Kerosene	megalitres	37.68
Diesel	megalitres	38.68
Light Fuel Oil	megalitres	38.68
Heavy Fuel Oil	megalitres	41.73
Petroleum Coke	megalitres	42.38
Aviation Gasoline	megalitres	33.52
Aviation Turbo Fuel	megalitres	35.93
Natural Gas	gigalitres	37.23
Electricity (use)	gigawatt hours	3.60
Electricity (output)	gigawatt hours	10.55

Tera = 10

Still gas is expressed in barrels of heavy fuel oil equivalent